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# Devonian Hydrocarbon Production in South Central Kentucky: A GIS Study

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DEVONIAN HYDROCARBON PRODUCTION IN SOUTH-CENTRAL  
KENTUCKY: A GIS STUDY

A Thesis  
Presented to  
The Faculty of the Department of Geography and Geology  
Western Kentucky University  
Bowling Green, Kentucky

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science

By  
Andrew David Reeder

August 2016

DEVONIAN HYDROCARBON PRODUCTION IN SOUTH CENTRAL KENTUCKY:  
A GIS STUDY

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DEVONIAN HYDROCARBON PRODUCTION IN SOUTH-CENTRAL  
KENTUCKY: A GIS STUDY

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Historically, Devonian Corniferous hydrocarbon production in south-central Kentucky has been a major contributor to the total hydrocarbon resources within Butler, Edmonson, and Warren counties. The Corniferous adds to the already large hydrocarbon totals produced from the Illinois Basin; however, this hydrocarbon contribution does not come without major pitfalls and inconsistencies. The south-central Kentucky Devonian Corniferous rocks comprise a diverse and complex hydrocarbon system made up of multiple migration pathways, trapping mechanisms, and seals. The multiple Corniferous units all derive production from the same source rock: the New Albany Shale.

A Geographic Information System (GIS) containing data on surface elevations, structure contours and faults, geophysical well logs, well-scale oil and gas production, and lease to regional-scale oil and gas production has been compiled to produce a three-dimensional (3-D) model using kriging with barriers to explain spatially the complexities of the Devonian Corniferous in south-central Kentucky. This model identifies the potential source rocks, the hydrocarbon charging and migration pathways, reservoirs, and reservoir seals. This model also utilizes kernel density estimation for developing an understanding of the spatial relationship of stratigraphic units being targeted within the Devonian relative to the spatially modeled Devonian Corniferous structures. This model

also indicates locations and depths of key producing zones within south-central Kentucky.

This project also explains the potential reasoning leading to the development of the Devonian Corniferous as a major hydrocarbon resource by placing it in the context of the underlying Silurian Corniferous and the multiple Siluro-Devonian unconformities positioned throughout the entire Siluro-Devonian section. This project bridges the gap between: 1) potential buried Silurian-age reef systems located south of the Pennyrike Fault zone, 2) the pervasive high porosity sections found in the lower Clear Creek Limestone unit, and 3) the development of expansive secondary partial dolomitization related to unconformable surfaces in the Middle and Upper Devonian Corniferous.

## **Chapter 1: Introduction**

### **1.1: Opening Statements**

Based on the reports published in the Annual Energy Outlook for 2015, the worldwide dependency on hydrocarbon, both as oil and gas, continues to grow (USEIA, 2015). Understanding what these hydrocarbon resources are, where they are typically found, and what is required for these hydrocarbon resources to be extracted from the Earth is critical. Even though recent global markets have become saturated with hydrocarbon products, and the price of crude oil is at an historical low, the global hydrocarbon market is forecast to rise steadily over the next 25 years, generating a higher demand for hydrocarbon and identification of hydrocarbon resources. Hydrocarbon prices are always subject to change depending on global politics, as well as supply and demand, with the eventual rise of the overall pricing of crude oil across the global market (USEIA, 2015). In the past, the U.S. has demonstrated its dependency on oil and gas, and this dependency should continue into the near future until other forms of renewable energy are able to offset the demand for hydrocarbon.

There have been many alternatives to fossil fuels presented over the past decade, most notably solar, wind, hydroelectric, geothermal, biogenic hydrogen, and thermonuclear. Yet none of these alternative and renewable energy sources would completely offset the total energy demands required by the U.S. and other countries (USEIA, 2015). To help make up this deficit, fossil fuels will be called upon in an increasing capacity until political, public, and private approval, adoption, and infrastructure development required to support the many renewable energy resources are achieved by all of the participating countries. Until this day arrives, all countries should

try to seek out and implement best retrieval and best management practices for hydrocarbon resources (crude oil and natural gas) to supplement the growing demand for energy.

In a saturated market, it is even more crucial to identify and utilize a low-cost, minimal time-expenditure technique to identify potential hydrocarbon resources and to evaluate and estimate the total in-place reserves. Many countries are still dependent on the importation of crude oil and natural gas from other countries to meet their growing energy needs. This expenditure would be better used to help identify and exploit localized and regional hydrocarbon resources. Identification of localized sources, both foreign and domestic, should only help to increase availability and reduce overall transport costs, improving profit margins, further reducing the cost shouldered by the citizens of all countries, and potentially providing lower cost energy to everyone worldwide.

Through the use of new and emerging low-cost spatial data collection, processing, and visualization technologies, alongside the proliferation of large, free, or nearly free, geophysical well log and hydrocarbon production datasets, it has become possible to develop a clearer understanding of the potential location and distribution of unexploited hydrocarbon resources. Many of these resources are within and adjacent to areas previously thought depleted or uneconomical to exploit, essentially breathing new life into areas thought to be exhausted. Through the application of two-dimensional, three-dimensional, and multiple spatial statistical approaches, subsurface visualization has become the first toolset used to develop an understanding of the subsurface.

## **1.2: The Thesis**

In Kentucky, historically, Devonian hydrocarbon production literally has been a *hit or miss* style of exploration associated with shallower Mississippian limestone production in the region. This project combines the 3-D spatial modeling, spatial analysis, and geostatistical analysis capability of GIS with petrophysical well analysis and hydrocarbon production reporting. To this end, three research questions have been developed to summarize the project.

- How can 3-D subsurface visualization aid in interpretation of subsurface data?
- What trends can be observed through the combination and analysis of multiple spatial and non-spatial datasets using GIS?
- What is the stratigraphic and structural relationship between the New Albany Shale and the Devonian Corniferous, and how might this relate to Devonian hydrocarbon production?

To facilitate the analysis of the targeted subsurface stratigraphic units and related production, clear research goals were established. These goals aid in outlining the processes required to complete the final 3-D models and generate any relevant information from the initial data for this project, including:

- Building a relational database for the study area;
- Generating a GIS base map for spatial data processing and analysis;
- Creating a 3-D model that accurately represents the subsurface targets; and
- Visualizing and identifying the relationship between Devonian hydrocarbon production and the subsurface (structure and stratigraphy)

The expected outcome for this project was twofold: First, confirmation that the structure of the New Albany Shale and the Devonian Corniferous is consistent with past literature; and, second, hydrocarbon production should be related to the structural and stratigraphic features located within and adjacent to the Rough Creek Graben, Moorman Syncline, Illinois Basin margin, and the Pennyrite Fault Zone. Previous literature from Buschbach and Kolata (1990), Freeman (1951), Nelson (1990), and Weller and Bell (1937) suggested that dipping and thickening of the New Albany Shale toward the basin depocenter located in south-central Illinois, with significant thickening within the Rough Creek Graben, mirrored the results presented by Kolata and Nelson (1990) and Hickman (2010). The strata dip is expected to steepen gently along the southern flank of the Pennyrite Fault Zone. As the target stratigraphic units cross the Pennyrite Fault Zone entering the Rough Creek Graben, the overall dip should steepen significantly to the west. A section of flat-to-shallow uplifted structure should be observed within the Rough Creek Graben, indicating the western arm of the Moorman Syncline (Kolata and Nelson, 1990; Hickman, 2010). The target hydrocarbon horizons along the Illinois Basin margin flanking the Rough Creek Graben gradually thicken toward the center of the Illinois Basin. Target hydrocarbon horizons located within the Moorman Syncline should also become thicker with increasing depth, but production rates are expected to be greater within the upper portions of the syncline near the western side of the axis rather than on the eastern flank of the syncline (Nelson, 1990; Seyler and Cluff, 1990; Hickman, 2010).

The purpose of this research is multi-tiered. Foremost, it is to provide an in-depth analysis of the New Albany Shale and Devonian Corniferous limestone units, specifically the Sellersburg and Jeffersonville undifferentiated Limestone units, the Clear Creek

Limestone, and the Ross Limestone. Secondly, it is to identify any visible trends within the Devonian hydrocarbon production of south central Kentucky. This project ultimately should aid in developing a clearer understanding of the complex hydrocarbon trapping mechanisms within the Devonian of south central Kentucky.

The justification for this research comes from both academia and industry. Additional information about the subsurface is, in and of itself, a contribution to the overall understanding of the basinal tectonostratigraphy. Many of the methods applied are adapted or repurposed from other geographic applications to fit the individual requirements within a hydrocarbon exploration context. Application of the methods used in this project within the petroleum industry could save initial exploration time and expense, reducing overall production costs. The methods used within this study are not restricted to the Illinois Basin and can be adapted for use in other regions.

## **Chapter 2: Background**

### **2.1: Basic Basin and Hydrocarbon Development**

Because hydrocarbon reservoirs are located within sedimentary basins, it is important to address and understand basin characteristics and development processes. For an in-depth discussion of basins, basin formation, and hydrocarbon development, see Allen and Allen (2005). By definition, basins fit into four categories: topographic, structural, drainage, and sedimentary. In the case of hydrocarbon production, the focus is on the structural and sedimentary definitions of a basin. As defined in the Glossary of Geology (Neuendorf et al., 2011), a structural basin is a region where rock strata dip towards a central location, and a sedimentary basin is an area characterized by thick sequences of accumulated sediments. Sedimentary basins typically originate from structural modification of Earth's crust, which occurs in response to tectonic processes acting on the lithosphere through crustal thinning, faulting, crustal loading, crustal flexure, and/or isostatic adjustment (Allen and Allen, 2005). Once the accommodation space is created through structural modification, sediments are then able to infill a given newly created basin. As the basin infills with sediment, crustal loading further modifies the basin through flexure and isostatic adjustment. This potentially creates additional accommodation space and/or shifts the depocenter within the basin. During sediment infilling, sediment sources will change as relative and global sea levels fluctuate, shifting the basin from high stand to low stand and back multiple times during basin development, thus generating a complex stratigraphy. Within these changing sediment packages (complex stratigraphy), the combination of diagenetic and structural modifications to the sediments influence hydrocarbon sources, migration pathways,

reservoirs, and seals that make up a hydrocarbon play. Understanding the interaction between hydrocarbon source rocks, migration pathways, hydrocarbon reservoir rock, and the cap rock (seal) is essential for estimation of the total producible hydrocarbon volumes (Allen and Allen, 2005). Many structural and sedimentary basins exist worldwide, and these provide significant hydrocarbon resources.

## **2.2: Regional Geology (Illinois Basin and Rough Creek Graben)**

Only a brief synopsis of the Illinois Basin, Rough Creek Graben, and the history of hydrocarbon development in the area is presented in this chapter. To gain a full understanding of the complexity of the Illinois Basin, see Leighton et al. (1990) on Interior Cratonic Basins. The Illinois Basin is a large intracratonic basin, encompassing about 60,000 mi<sup>2</sup>, and is located in Illinois, Indiana, and Kentucky, as shown in Figure 2.1 (Buschbach and Kolata, 1990). The Illinois Basin, formed during the Paleozoic, extends from northern Illinois and Indiana down to south-western Kentucky (Weller and Bell, 1937). The modern Illinois Basin is separated from the other surrounding basins by a series of large arches and domes. During much of the Paleozoic, the proto-Illinois Basin was open to multiple other basins that flank the present-day Illinois Basin (Buschbach and Kolata, 1990). The southern end of the Illinois Basin overlies the Reelfoot Rift Valley, a paleo-rift system that opened and closed twice during the Paleozoic and early Mesozoic eras. This paleo-rift system is responsible for the formation of the Rough Creek Graben, a block of bedrock that has dropped 10,000 feet (3,000 meters) to provide a deep area within the basin for sediments to collect (Nelson, 1990; Buschbach and Kolata, 1990).

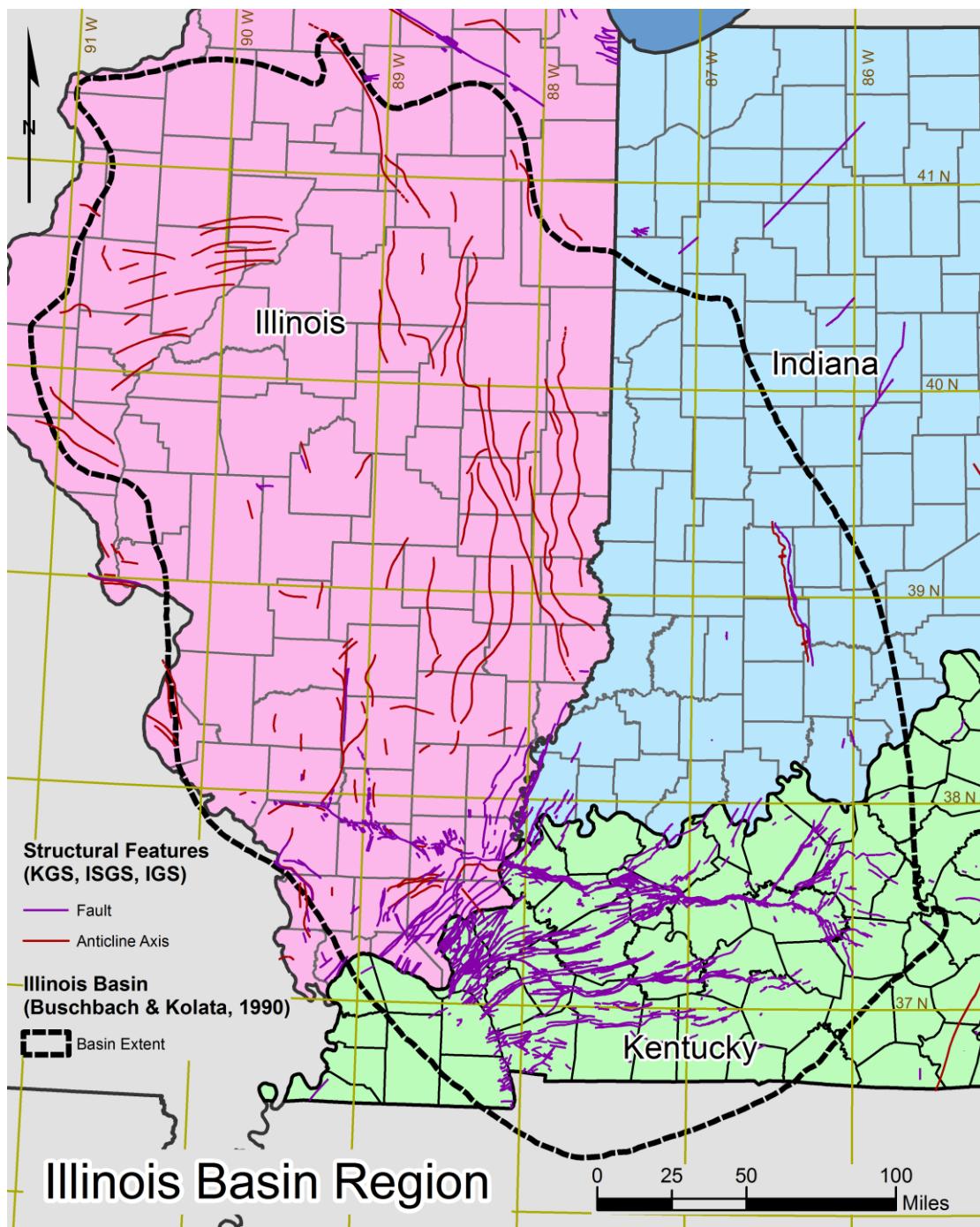


Figure 2.1. Illinois Basin Regional Map. The Illinois Basin is separated from surrounding basins by a series of arches and domes: the Pascola Arch (south and southwest), the Ozark Dome (southwest), the Northeast Missouri Arch (west), the Mississippi River Arch (northwest), the Kankakee Arch (northeast), the Cincinnati arch (east), and the Nashville Dome (south and southeast). Source: created by author with Illinois Basin outline adopted from Buschbach and Kolata (1990).

Overall, the Illinois Basin contains 100,000 mi<sup>3</sup> of sediment. These sediments predominantly range from Cambrian to Pennsylvanian in age, with some sections of Permian and Cretaceous age sediments, but these younger sediments are rare within the basin (Buschbach and Kolata, 1990). The Illinois Basin sediment thicknesses range from tens of feet thick (three to five meters), along the basin margins, to over 23,000 feet (7,000 meters) thick in the Rough Creek Graben area. Most of the Illinois Basin sedimentary rocks are composed of marine and deltaic deposits, dominated by carbonates with pulses of siliciclastics. There is also a large volume of coal in the southern portion of the basin (Buschbach and Kolata, 1990). All of the Illinois Basin sediments rest on crystalline Precambrian basement rocks comprising the original cratonic continental body (Weller and Bell, 1937; Buschbach and Kolata, 1990; Nelson, 1990). The Illinois Basin was a static depositional environment for short periods during its development. Multiple longer periods of dynamic depositional and tectonic episodes ultimately controlled basin development.

The Illinois Basin structural history is important for understanding, identifying, and locating key hydrocarbon productive units in the basin. The northern portion of the Illinois Basin can be characterized by a series of anticlines and synclines, with faults formed through isostatic readjustments, and lithospheric flexure resulting from tectonic forces exerted on the lower and eastern portions of the Illinois Basin (Nelson, 1990; Kolata and Nelson, 1990). The central portion of the Illinois Basin is characterized by a series of anticlines and monoclines resulting from sediment loading associated with increasing sediment depths/thicknesses along a southward trend (Kolata and Nelson, 1990).

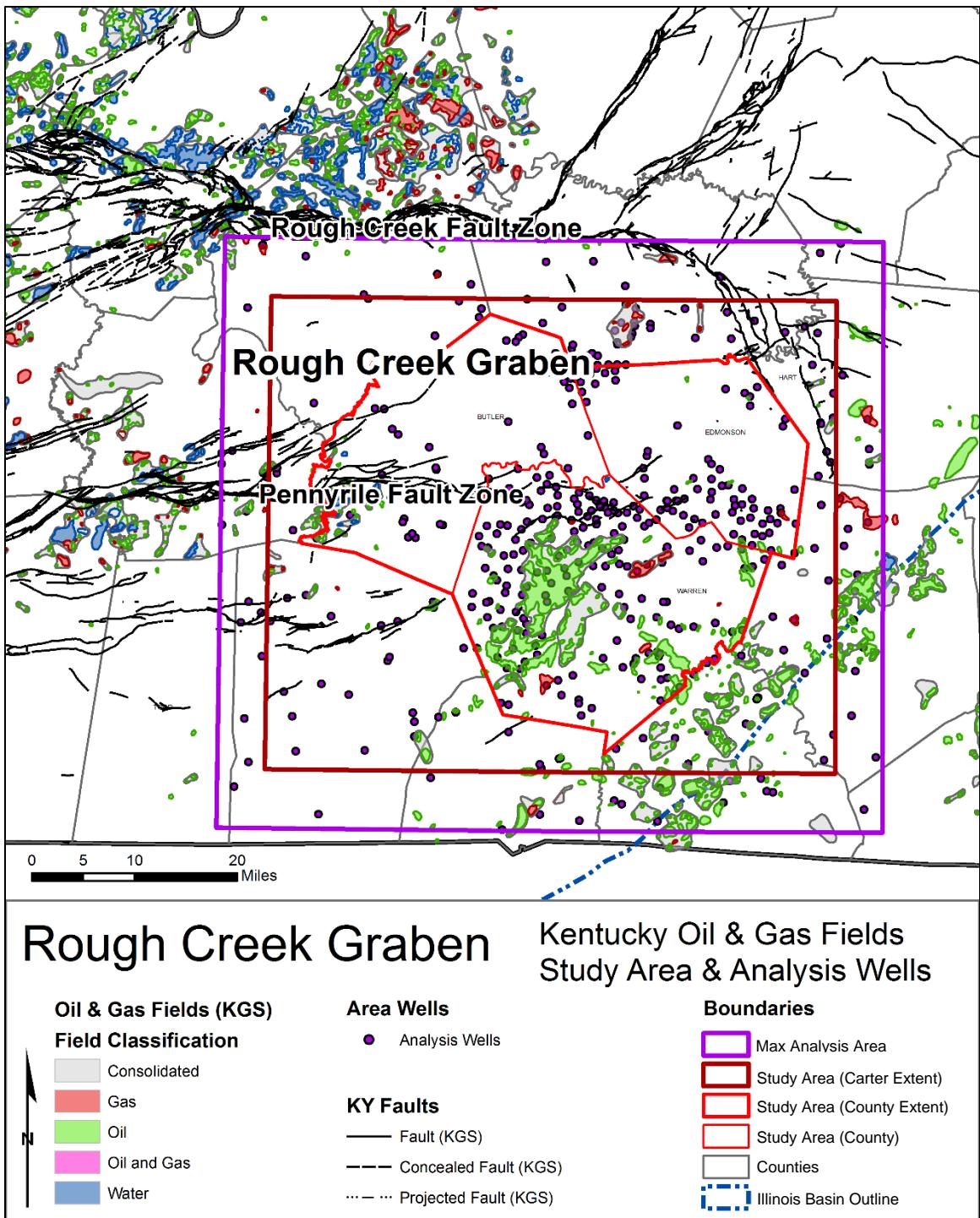


Figure 2.2. Rough Creek Graben area with Oil and Gas Fields and Study Area. The Rough Creek Graben runs east-west across the central region of Kentucky, flanked to the north by the Rough Creek Fault Zone and to the south by the Pennyville Fault Zone. Note the absence of known oil and gas production within the graben and the prolific production north and south of the graben. Source: created by author with oil and gas field, geological structure data retrieved from KGS (2014).

The regional subsidence is a result of tectonic displacement at the southern end of the Illinois Basin (Nelson, 1990), which is dominated by faulting, horsts, and grabens related to the multiple opening and closing of the Reelfoot Rift Valley (Nelson, 1990; Bertagne and Leising, 1990; Kolata and Nelson, 1990). The Reelfoot rifting occurred in intervals over most of the Paleozoic and into the Mesozoic. This motion resulted in the development of the Rough Creek Graben and bounding fault zones in the southern end of the basin, as shown in Figure 2.2. The Rough Creek Graben (a dropped structural block) has experienced several large subsidence events. Such subsidence created enormous accommodation space (23,000+ ft. / 7,000+ m.) for sediments and highly faulted regions adjacent to the graben (Bertagne and Leising, 1990; Kolata and Nelson, 1990). The responses to regional tectonic, isostatic, and flexural forces triggered numerous erosional processes that occurred within the basin. These erosional processes, in conjunction with a series of global erosional events resultant from eustatic sea-level change, mark the six major bounding sequences (Sloss Mega Sequences) present within the Illinois Basin (Sloss, 1963). Between these major sequences, unconformable surfaces are recognized as erosional features, with many incising older stratigraphic units and unconformities. Such incision creates a network of channels allowing younger sediment to rest upon much older units and controlling sediment distribution and accommodation within the Illinois Basin, with the Rough Creek Graben possessing the greatest accommodation (Weller and Bell, 1937; Kolata, 1990). It has long been recognized that unconformities separating many of the stratigraphic units are important within the Illinois Basin and Rough Creek Graben for hydrocarbon reservoir development (Weller and Bell, 1937, Freeman, 1951).

Hydrocarbon reservoirs have been the driving force for Illinois Basin exploration, characterization, and mapping for a long time.

The Illinois Basin has been an active hydrocarbon (natural gas and oil) production region for more than the last 130 years, with Weller and Bell (1937) describing the first economical oil and gas discovery that occurred in 1886 with the Litchfield Pool. The basin is the 6<sup>th</sup> largest producer in the United States, reaching its peak in the early 1900s and tapering off in the mid-1930s (Weller and Bell, 1937; Mast and Howard, 1990). Seismic reflectance and subsurface geologic exploration techniques, once initiated, aided in basin exploration and, as a result, production began to climb steadily until the mid-1940s (Weller and Bell, 1937; Mast and Howard, 1990). From the 1950s through to the present, hydraulic fracturing has been utilized to maintain production levels within the basin. Most of the hydrocarbon reservoirs have been produced from the Upper Mississippian (60% production volume) and Pennsylvanian units (13.1% production volume) (Mast and Howard, 1990). Other older productive horizons (4.5% production volume) within the Illinois Basin have hydrocarbons associated with them, but such horizons have not been exploited for multiple reasons, such as too deep, too hazardous, too expensive to produce, wrong hydrocarbon, and/or low production rates (Mast and Howard, 1990; Seyler and Cluff, 1990). Many of the hydrocarbon traps within the Illinois Basin are structurally controlled by fault systems or unconformities. Faulting can create impermeable surfaces preventing migration of hydrocarbons, thus establishing a concentration in a relatively small region (Seyler and Cluff, 1990). Regional unconformities associated with the deposition of porous sedimentary rocks (sandstone) on, or directly adjacent to, older marine sediments (carbonates and shale) provide excellent conduits for

hydrocarbon migration and entrapment, accounting for 40% of the total Pennsylvanian production volume (Howard, 1990). Studies of hydrocarbon chemistry and maturation indicate that most of the hydrocarbons being produced were generated from source rock in much older units and that future production zones might be located in, or adjacent to, those older units (Cluff and Byrnes, 1990). Studies of the migration patterns of hydrocarbons have also indicated that production zones lie within or directly adjacent to much older and deeper source beds. Some reported migration distances exceed 100 miles (160 kilometers) from the original source rock, resulting in the limited shallow hydrocarbon production zones commonly drilled over the last 120 years (Bethke et al., 1990). New targets for hydrocarbon exploration in the Illinois Basin have been identified in the older Cambrian, Ordovician, Silurian, and Devonian rocks. These pre-Mississippian targets are suspected to hold large hydrocarbon volumes (Davis, 1990). A thorough understanding of the Paleozoic strata present within the Illinois Basin, the major unconformities separating Paleozoic units, and the associated paleoenvironments, is required for identification and production of the hydrocarbon reservoirs.

Much of the broad-scale mapping of the Illinois Basin, the major oil and natural gas fields, and the major unconformities (Sloss Mega Sequences) between Paleozoic units has been worked out through well-log and outcrop correlation. Dana and Scobey (1941) utilized well logs to generate a cross section of the Chester Series (Mississippian age) across Illinois and Kentucky. This cross section identified thinning and thickening trends and overall lithology of the region. Siever (1951) produced basal Pennsylvanian maps from well-logs and outcrop data that generated more insight into the structure of the paleoenvironment of the basal Pennsylvanian. Davis et al. (1974) utilized well logs to

generate geology and hydrology maps of the basal Pennsylvanian for the western Kentucky coal field region. These maps identified lithology, porosity, and flow direction of the freshwater aquifers. Droste and Keller (1989) compiled a map from approximately 20,000 well logs defining the extent of the basal Pennsylvanian unconformity in Indiana associated with pre-Pennsylvanian landscape. This publication helped reconstruct the paleoenvironment existing during the early Pennsylvanian through the correlation of geophysical data. Droste and Keller (1989) used relatively high resolution, one well per 10 acres, data points to generate their maps of the basal Pennsylvanian unconformity in Indiana. Oltz et al. (1991) integrated old well-log data and new correction and analysis techniques to petrophysically characterize the lithology and identify heterogeneity within Chesterian age hydrocarbon reservoirs. Later, Droste et al. (2000) extended the scope of research into Kentucky and Illinois by adding 3,000 well logs to the dataset, expanding the reconstructed paleoenvironment. Freeman (1951; 1953) made substantial efforts to characterize and correlate the older Cambrian through Devonian sedimentary rocks across the Illinois Basin, and was one of the first to package the Ordovician, Silurian, and Devonian units based upon the unconformable surfaces separating each of the groups. Gooding (2012) has also made substantial efforts to understand the characteristics and structures of the older Cambrian and Ordovician systems in the eastern section of the Illinois Basin. Gooding (2012) was able to correlate the boundary between the Knox and the overlying formations as a karstic unconformable surface. Hickman (2010) produced a detailed report on the structure and stratigraphy of the southeast quarter of the Illinois Basin, focusing on the Rough Creek Graben. All of the mapping efforts mentioned added substantial understanding of the structure, stratigraphy, and paleoenvironmental

conditions of the Illinois Basin. Yet, within some areas, there is still significant confusion and misunderstanding of the sedimentary rocks and characterization of the Illinois Basin, especially along the basin flanks and margins.

### **2.3: The Corniferous Issue**

Significant volumes of hydrocarbons are produced from a series of stratigraphic units ranging from middle Silurian to the middle Devonian. In Kentucky, of the 20,617 wells with known production horizons, 2,888 wells produce from this Silurian-Devonian section, totaling 14% of the producing wells from 1997 to 2010 (Nuttall, 2014). Originally, the Kentucky Corniferous unit was thought to be the same productive Devonian unit as the Onondaga Limestone of New York; however, this correlation proved to be incorrect (Freeman, 1951). The Illinois Basin Corniferous is actually a combination of the limestone units comprising the Middle Devonian through Upper Silurian sections. This unit is still a common target for drilling in south central Kentucky.

Corniferous units are very similar in appearance and physical properties, all of which are considered to be carbonates with varying degrees of dolomitization and silicification, with minor intercalated siliciclastic zones ranging from sandstones to shales, as shown in Figure 2.3. According to Freeman (1941; 1951), Greb et al. (1993), and Nosow (1959) the Middle and Lower Devonian carbonates (i.e., Sellersburg, Jeffersonville, and Clear Creek limestone units) are typically fossiliferous, fine-to-coarsely crystalline, clean (containing minimal argillaceous material) limestones, with minor intercalated mixed siliciclastic/calcareous shale and/or argillaceous limestone.

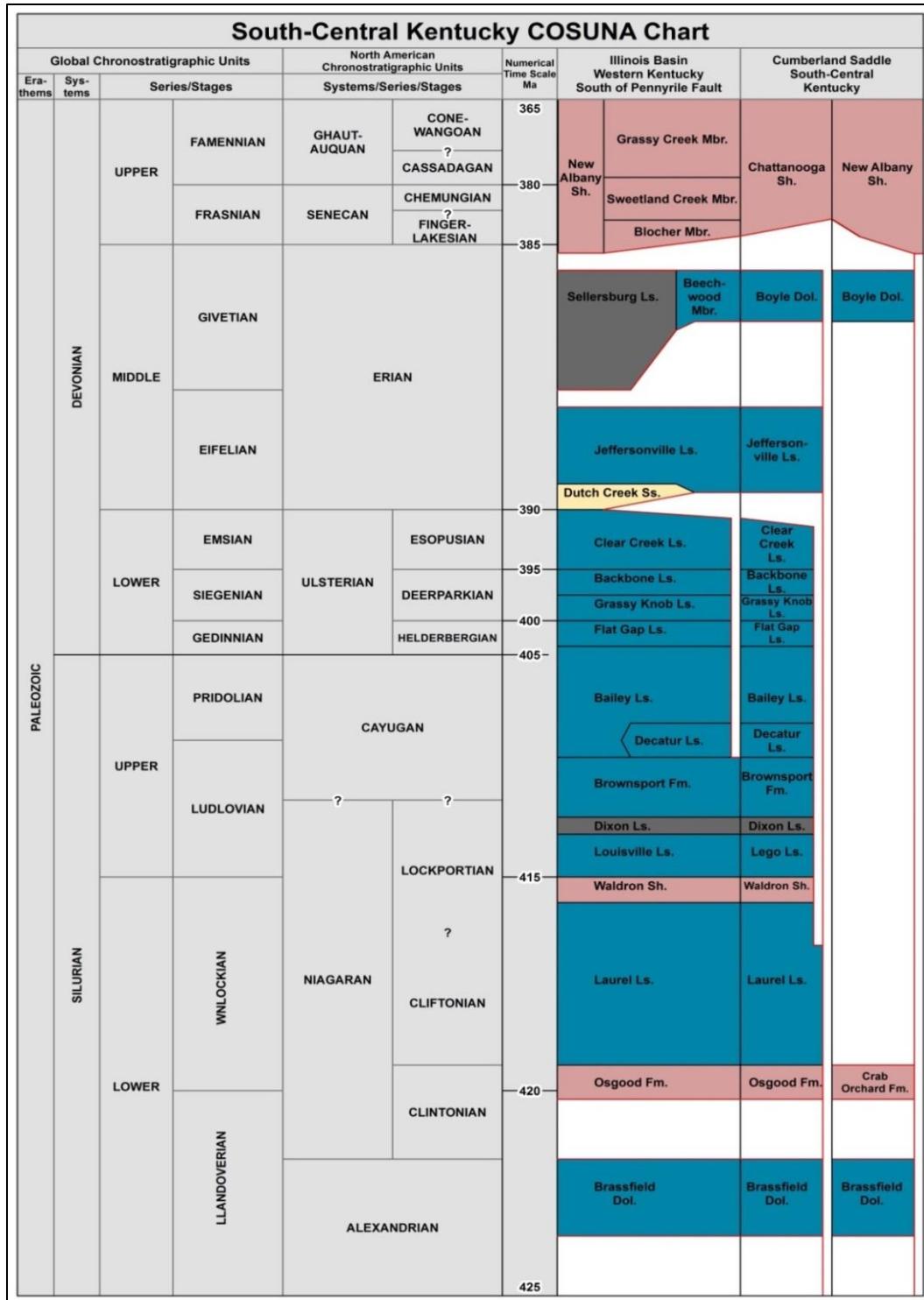


Figure 2.3. South Central Kentucky Silurian-Devonian COSUNA Chart. Unconformable surfaces are represented with red lines (vertical red line indicate entire section cut out by unconformable surfaces), limestone units are in blue or gray, and siliciclastic units are in pink or yellow. Source: modified by author from Shaver et al. (1984).

The Dutch Creek Sandstone unit is typically identified as the basal unit marking the middle Devonian unconformity (Freeman, 1951). The lower Devonian units (Ross and Grassy Knob limestone units) tend to be richer in shale and siltstone, as well as commonly cherty, carbonate units when compared to the upper Devonian limestone units (Freeman, 1941; 1951; Droste and Horowitz, 2001). This series of units is typically a point of contention as to where the Silurian units end and the Devonian begin but, for this project, the Ross and Grassy Knob limestone units delineate the base of the Devonian and represent the Silurian-Devonian unconformity as described by Freeman (1951). Silurian units positioned below the unconformity are also typically fossiliferous, fine-to-coarsely crystalline limestone and dolostone units. The Silurian units contain more of the mixed siliciclastic/calcareous shale and/or argillaceous material than the Devonian counterparts (Freeman, 1951). These upper Silurian Bailey/Decatur Limestone units and the Brownsport Formation are dominantly limestone, with mixed shaly limestone and dolomitic limestone intervals. The cleaner limestone and dolomitic limestone units are typically intercalated between shale and mixed shaly limestone units. The lower portion of the upper Silurian, made up of the Dixon and Lego limestone units, are typically moderately porous to vugular dolomitic limestone to dolostone (Freeman, 1951). The stratigraphic positioning of all of the Silurian-Devonian units is also illustrated in Figure 2.3.

Drillers or operators often do not make the distinction between the Devonian and Silurian sections, assigning all Silurian-Devonian sub-shale (i.e., New Albany/Chattanooga/Ohio) carbonate units to the catch-all term of the *Corniferous*. If a distinction is made between the Silurian-Devonian units, often times those units are

misclassified leading to more confusion and misidentification of Corniferous hydrocarbon pay zones. Most commonly the Silurian-Devonian units are referenced by their porosity breaks and not their actual stratigraphic names, typically Corniferous #1, Corniferous #2, and Corniferous #3. Occasionally, these Corniferous breaks are misrepresented or inappropriately applied, especially when the first porosity breaks occur relatively high in the Silurian-Devonian section, in the Sellersburg and Jeffersonville Limestone units and the Dutch Creek Sandstone. Such misclassification further obfuscates an already confusing stratigraphy.

## **2.4: GIS**

A Geographic Information System (GIS) integrates hardware, software, and data for capturing, managing, analyzing, and displaying geographically referenced information, allowing the user to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts (Wade and Sommer, 2006). GIS evolved from a computer-based mapping system in the 1960s and 1970s to a much more robust system. This evolution incorporated spatial database management with mapping technologies in the 1980s and 1990s (Berry, 2000). In more recent years, GIS has incorporated a substantial number of 2-D and 3-D spatial statistics, analyses, and network analysis tools to the GIS toolbox. This development is helping to make GIS a formidable 2-D and 3-D modeling platform (Berry, 2000; Turner, 2000). Current GIS technologies are capable of producing 2-D and 3-D models of subsurface features, but are still inadequate for predictive spatial modeling or dynamic simulation modeling, and are limited to smoothly changing features (Berry, 2000; Bonham-Carter, 2000; Turner, 2000). With future improvements, GIS are expected

to continue to evolve, becoming more spatially cognitive, incorporating more analytical and predictive functionality into a user-oriented spatial data management system (Berry, 2000; Turner, 2000).

GIS has greatly increased the abilities of well-log correlation and mapping of surface and subsurface through the increasing capabilities of the spatial database management systems. Geospatial databases contain the individual spatially referenced data items, making up all of the files displayed by the GIS; each of these datasets can be edited, analyzed, displayed, and data mined for useful information (Berry, 2000; Bonham-Carter, 2000). Database construction and management of GIS aids in directing research goals and data collection required for successful completion of geospatial projects. Database construction in GIS ultimately allows for the compilation and comparison of spatial datasets, visualization of data that were previously extremely time consuming to compile, and analysis of relationships that were previously unidentified (Bonham-Carter, 2000; Turner, 2000). With the creation, implementation, and maintenance of a database using spatial database management systems, statistical and geostatistical analysis becomes a much easier task.

As geospatial technologies advance, the role of statistical/geostatistical analysis required to quantify, validate, and predict the behavior/response of subsurface features increases. Geostatistics or geostatistical analysis is a set of statistical tools used to analyze geologic and/or petrophysical data to identify patterns, relationships, and/or forecast (predict) unknown or missing values in a given dataset (Hohn and McDowell, 1994; Journel, 1994; Coburn and Yarus, 2000; Goovaerts, 2006). Doveton (1994) covered the use of statistical distribution and linear regression estimation as they apply to descriptive

geologic phenomena and also discussed statistical methods used for porosity estimation, water saturation, and formation permeability in relation to acquired petrophysical datasets. Srivastava (1994) discussed the introduction of stochastic analyses, as applied to geologic data and petrophysical properties, in the petroleum industry. Hohn and McDowell (1994) utilized kriging, a geostatistical interpolation method, to identify heterogeneities within oil-field production data from Lower Mississippian sandstone in West Virginia. Hohn and McDowell (1994) and Kushnir and Yarus (1992) discussed the effects of natural geological anisotropy on statistical evaluation and predictive uncertainty. Krivoruchko et al. (2006) discussed a modification of ordinary kriging to account for the appearance of control point nuggets (parameters that represent error within a model) in the resulting geostatistical analysis. Bawiec and Grundy (1992) and Goovaerts (2006) discussed the use of geostatistics as a tool for modeling the uncertainty (unknown values) in continuous petrophysical properties in the subsurface at multiple scales. However, geostatistics alone are not enough to visualize and analyze subsurface features adequately.

GIS has been utilized with some success in the 3-D modeling of subsurface features. Hamilton and Henize (1994) utilized a GIS to contour a series of pinnacle reefs in the Michigan Basin accurately. The GIS, using 590 wells, only required a series of simple modifications to the gridded surfaces to represent the geometry of the reef system realistically (Hamilton and Henize, 1994). Zuppann and O'Neal (1999) utilized a GIS to generate a 3-D model of the Ste. Genevieve oolitic shoals located in the subsurface of Gibson County, Indiana. The GIS aided in correlating porosity variation from 400 well logs to generate the subsurface oolitic shoal complex (Zuppann and O'Neal, 1999). Day

et al. (2000) compiled a GIS to generate a 3-D model for reservoir characterization in the Gulf of Suez. The GIS analyzed petrophysical data from well logs and created accurate representations of the structure and stratigraphy of the area (Day et al., 2000). Dhont et al. (2005) constructed a 3-D model based on seismic surveys, well logs, satellite images, and surface maps. The resulting model was able to portray the surface and subsurface features of the Beirut watershed accurately (Dhont et al., 2005). GIS modeling, both 2-D and 3-D, demonstrates considerable analytical power, so, as new applications continue to be developed for hydrocarbon exploration and production, it is imperative to recognize the advantages and shortcomings of given methods and modeling techniques utilized.

Acquisition and processing of high-resolution seismic data, well-log interpretations, surface topography, and outcrop datasets are critical to future hydrocarbon reservoir identification and production. Petroleum exploration GIS technologies are being advanced toward the integration of multiple geophysical data types and geostatistical analysis into a GIS platform capable of evaluating datasets holistically (Berry, 2000; Coburn and Yarus, 2000). Turner (2006) indicated that, as technologies continue to advance, the realm of GIS and geostatistics could merge into a new discipline tailored to the geoscientific world, aptly dubbed Geoscientific Information Systems (GSIS). Coburn (2000) stated that the development of GIS packages and applications to manage and visualize data would facilitate work done in the petroleum industry. Young (2009) discussed the incorporation and exploitation of multiple petrophysical and geophysical data sources (namely advanced 3-D and 4-D seismic surveys, geophysical well logs, and geostatistics) to characterize the subsurface accurately for exploration and production purposes. With recent advances and integration

of technologies, there is still not a perfect platform for 3-D modeling of subsurface features with GIS. Thus, the adaptation and repurposing of other industry specific GIS tools are a requisite to fill specific needs of subsurface exploration.

## **Chapter 3: Data, Study Area, and Control Points**

### **3.1: Data**

Data for this project were obtained from multiple sources and derived from a variety of datasets. This project required GIS data in the form of spreadsheets, shapefiles, and rasters, hydrocarbon production data in the form of annual reports and well files, digital well logs in the form of .djvu image files, and formation information presented as a database (see Table 3.1 for a complete data list). The majority of the GIS data consists of a series of spreadsheets, databases, rasters, and shapefiles that were used to develop a model of the study area and beyond; in this case, south-central Kentucky. GIS databases are datasets with observation points or features (rows) and observations or data values (columns) all with a geospatial component. These datasets commonly contain geographic information, such as coordinates and other spatial data, or can be associated with another dataset that has geographic information. Raster data are similar to a database, but with a fundamental difference. Rasters are a series of equally sized geographically referenced cells or grid units that contain a value, typically stored in single or multiple bands. Rasters are commonly images and, in this case, modeled surfaces. Shapefiles, a packaging of multiple spatial, nonspatial, and geometric files, were developed to represent spatial data as points, lines, or polygons with associated database-style attributes. Shapefiles can possess direction and magnitude attributes and are, therefore, referred to by many as vector files.

**Table 3.1: Data Files**

File Name	File Type	Source	General Use
KY Oil & Gas Well Logs	.djvu	KGS (2014a)	Formation, Production, Porosity, lithology, etc.
KY Formation Tops	.xlsx	KGS (2014b)	Formation tops, Datum
KY Oil & Gas Well Production	.xlsx	KGS (2014c)	Generalized Production
KY Oil & Gas Production Data	.xlsx	DNR (2014)	Production by Permit
KY Oil & Gas Well Point Data	shapefile	KGS (2014d)	Location, Status, Purpose, Fluid Type, etc.
KY Oil & Gas Fields	shapefile	KGS (2014e); Schwalb et al. (1972)	Oil & Gas production locations
US State Outlines	shapefile	KGS (2014e)	Location, Area
KY County Outlines	shapefile	KGS (2014d)	Location, Area
KY Carter Coordinate System	shapefile	KGS (2014a)	Gridding System
KY 1:500,000 Geologic Fault Data	shapefile	KGS (2014b)	Fault location, Offset Direction
KY Geologic Structural Contour Data	shapefile	KGS (2014c)	Generalized Geological Structure
KY 10 Meter SRTM Digital Elevation Model	.dem	DGI (2014)	Surface Elevation, Datum

Oil and gas production data consist of a database containing annual reports and well data covering the study area. Annual reports contain monthly production by permit for the years spanning 1997 to 2010. Well data consist of initial well-production values reported by the driller at the time of completion prior to treatment, the volumes of hydrocarbon sold, and the Kentucky tax revenue of all wells. Oil and gas database files also contain the well-production horizons, well-perforation locations, and/or hydrocarbon-show intervals.

Digital well logs used in this project are KGS scanned images, in .djvu format, of the original paper copy well data package handed over to the state of Kentucky. These packages commonly contain a scout ticket, plat-location map, well report and well affidavit, driller's notes, formation report, sample descriptions, plugging affidavit, multiple petrophysical well logs, and core-analysis reports. These packages contain valuable information on the geography, stratigraphy, lithology, and hydrocarbon potential of a given location. Petrophysical and fluid information can be ascertained through the analysis of the subsurface characteristics recorded on the well log. Petrophysical information for this project consists of a database of historical subsurface stratigraphic elevations, picked by the driller on site and/or KGS geologists from the well logs. This database is not inclusive and is only used as a guide to aid in the determination of subsurface feature elevations.

All of the data for this project are available free to the public from multiple governmental agencies. The KGS provided all of the GIS data for the surface and subsurface models and part of the production data through either the KGS webpage or direct links to KGS sponsored websites. These include all of the surface data (coordinate grids, county boundaries, etc.), the 10-meter resolution Digital Elevation Model (DEM), well data (location and production), formation information, and the geophysical well logs. The Kentucky Oil and Gas Commission (KOGC) provided the production data used in this project. All of the data for this project were accessed through KGS (2014a-e), DGI (2014), and DNR (2014) websites; these government entities post state data online for free public access and download.

### **3.2: Study Area**

The surface study area for this project covers a rectangular region containing Butler, Edmonson, and Warren County Kentucky (shown in Figure 3.1). This region is defined by the Carter Coordinates, letters D-K and numbers 31-42. The subsurface study area for this project consists of the Lower Mississippian/Upper Devonian New Albany Shale, the Devonian Corniferous, and Silurian Corniferous limestone units, with special focus on the hydrocarbon production from these stratigraphic units. To increase confidence in the edges of the modeled area, the analysis area is extended one five-mile Carter Grid unit beyond the reported study area. Only data from the area contained within the unexpanded surface study area are presented in the modeled analyses.

Site selection for this project was based upon several criteria. First, the area needed to be within the Illinois Basin, for the purpose of being part of an Illinois Basin Studies project. The study area is part of the southeastern flank of the Illinois Basin in south central Kentucky. Second, there needed to be a large, fairly evenly distributed dataset of wells and production from the Devonian units. The study area covers one of the larger Devonian production horizons in the region and has a continuous layer of Lower Mississippian/Upper Devonian black shale. Third was relative geological simplicity. The study area selected is in a location with fairly simple geology, without any active proximal orogenic events and minimal structural modification. This does not include past rifting (Reelfoot rift zone) or multiple orogenic events (Taconic, Acadian, or Alleghany) that assisted in the production of the regional structures, sediments and stratigraphy.

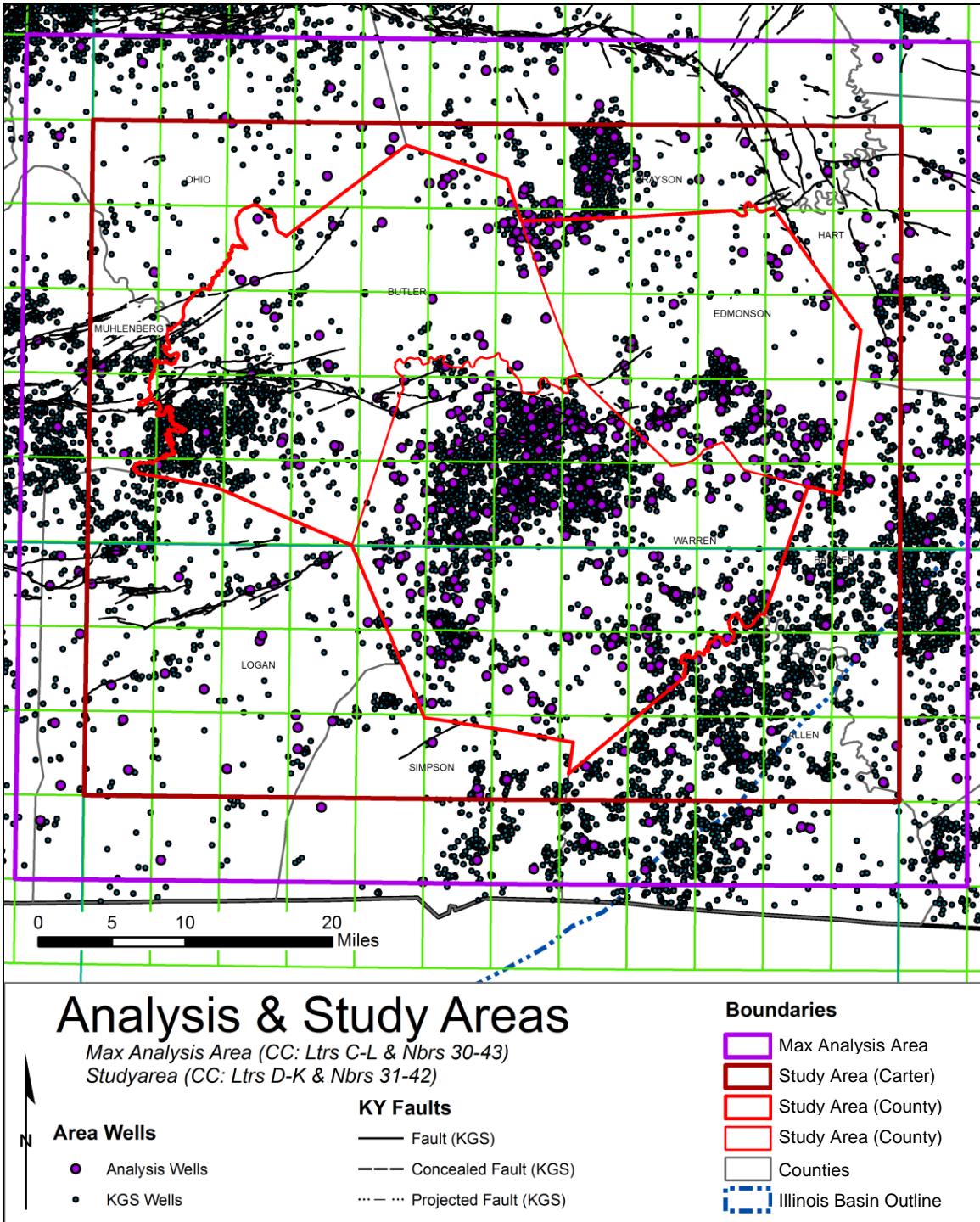


Figure 3.1. Analysis Data Points and Study Areas.

The rectangular limit of the study area, Carter Coordinates letters D-K and numbers 31-42, encompasses Butler, Edmonson, and Warren Counties. This area is located on the southeastern flank of the Illinois Basin. All data for this study were derived from the KGS oil and gas wells dataset. Source: by author, Illinois Basin outline adapted from Buschbach and Kolata (1990), point, line, and grid data adapted from KGS (2014).

The study area has multiple east-west trending faults belonging to the Pennyrite Fault system. The study area also contains two regional structures, the Rough Creek Graben and the Moorman Syncline, with the overall structure manifested as strata dipping west to northwest toward the basin depocenter.

### **3.3: Surface-Analysis Control Points**

A total of 454 control points (see Figure 3.2), were selected for the Corniferous structural analysis. These points were chosen based upon multiple parameters: depth of well penetration, data available on each well location, and spatial distribution. These points were originally derived from the KGS oil and gas well database sorted with respect to Devonian and deeper targets with an adequate accompanying petrophysical well log and sample log. Control point wells are as evenly distributed as the spatial distribution of the oil and gas well dataset allowed. Control point wells were picked in pairs, whenever possible, to serve as correlation redundancy when identifying formation tops relative to well log signatures.

The 423 well logs used in this analysis were generated by nuclear-type logging tool suites measuring the natural formation gamma ray, formation density, and/or neutron density. Gamma ray (GR) logging tools measure the amount of *in situ* formation radioactivity, giving an indication of formation shalyness based on radionuclide content derived from the amounts of Uranium, Thorium and/or Potassium present within the formations. Typically, shale rich in organic matter has a higher concentration of Uranium (Asquith et al., 2004).

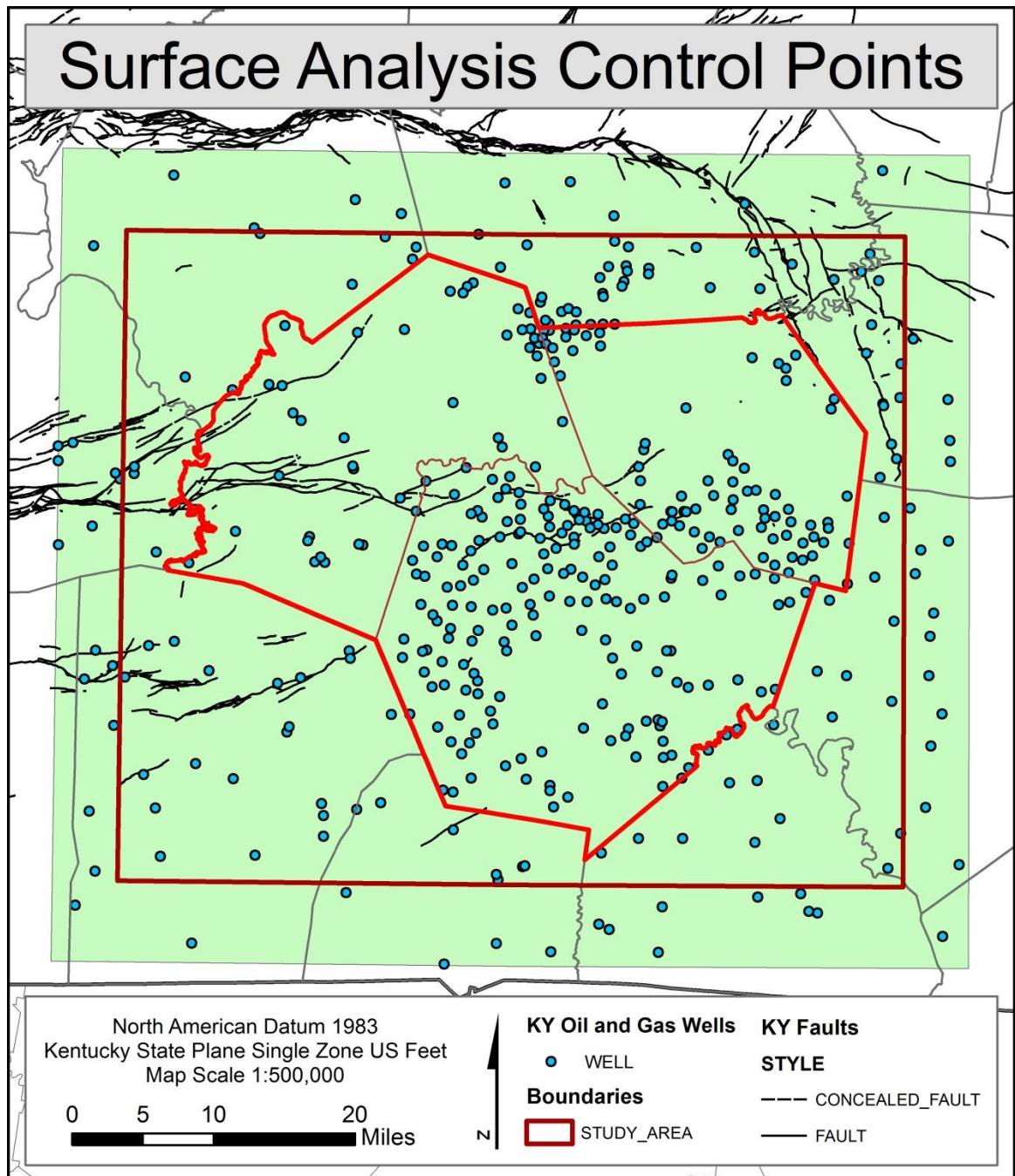


Figure 3.2. Surface Analysis Control Points.

The analysis area (identified by the green rectangle) extends one, five-mile Carter Coordinate grid unit around the perimeter beyond the initial 88 unit Carter Coordinate grid (identified by the maroon rectangle). Each five-mile Carter Coordinate grid unit is a  $25 \text{ mi}^2$  grid. The original study area is  $2,200 \text{ mi}^2$  and the extended analysis area is  $3,250 \text{ mi}^2$ . This extension reduces edge effect improving confidence in the modeled surfaces. Source: created by author with political boundaries, well points, and geological structure data retrieved from KGS (2014).

Density logs measure and record bulk formation density (including fluids and void space) to determine relative formation porosity and lithology based upon a standard material density. Neutron logs measure and record the bulk formation hydrogen ion content (including fluids and void space) to determine relative formation porosity based upon hydrogen content within a standard matrix lithology (Asquith et al., 2004). Different logging tools collectively can be used to determine lithology, porosity, and general fluid type for a given formation. Because different operators use different tools with different calibration standards and local geology varies due to depositional and diagenetic processes, all of the log derived formation characterization are reported with qualitative values.

The 454 well affidavits containing information on well location, well completion, formation depths, pay zones, hydrocarbon shows, initial production (IP) rates, and well/formation treatment were examined to identify missing information required for the subsurface analyses. In some cases, the only formation data available are from these documents.

## **Chapter 4: Methods**

### **4.1: Project Software**

This project utilizes multiple ESRI® software products for visualization, and analysis of the project data. The GIS basemap, data-analysis environment, and figure generation for this project were generated in ArcMap® 10.2.2 (ArcInfo license) with Spatial Analyst™, Geostatistical Analyst™, and 3-D Analyst™ extensions. The Spatial Analyst and Geostatistical Analyst extensions were used to generate the kernel density estimation models and kriging surfaces. The 3-D Analyst extension was utilized to manipulate the resulting modeled surfaces. ArcScene® 10.2.2 was used to generate the 3-D modeling environment needed to visualize the relationships between subsurface formations and production patterns.

This project also used the Petra® 3.8 software suite developed and licensed by IHS®. Petra's raster log calibration, log correlation, cross-section, and main system modules were employed for this project. The raster log calibration and log correlation modules were used to examine select petrophysical well logs and identify formation tops. The cross-section module was utilized to generate the cross-sections presented in the appendix of this project.

### **4.2: GIS Basemap**

The development of the GIS basemap required incorporation of data from multiple sources and a significant amount of pre-processing to generate the required files. In addition to the datasets used to analyze oil and gas production and drilling activity, multiple processing files were generated to facilitate the final analyses. Table 4.1 lists the

key files generated for this project. These files were used to delineate the study area, process larger files, select important data, and mask unwanted extents.

**Table 4.1: Generated Files**

Generated File Name	Original File Data Source	File Use
Study Area Clip Tool	KY Carter Coordinate System (KGS, 2014a)	Clipping all data to display study area
Modeling Area Clip Tool	KY Carter Coordinate System (KGS, 2014a)	Clipping data to the max analysis extent
Study Area County Boundary	KY County Outlines (KGS, 2014d)	Identification of 3 counties of interest
Kernel Density Modeling Well Dataset	KY Oil & Gas Well Point Data (KGS, 2014d)	All wells within the max extent of the analysis area
Total Oil and Gas Wells Dataset	KY Oil & Gas Well Point Data (KGS, 2014d)	All wells within max extent of analysis area
Oil & Gas Production Dataset	KY Oil & Gas Production (KGS, 2014a; DNR, 2014)	All production data reported and well IP data
Surface Control Point Dataset	KY Oil & Gas Well Logs (KGS, 2014a)	Control points with data and formation tops
Surface Analysis Dataset	KGS Oil & Gas Well Dataset (KGS, 2014a)	3-D surface generation
Study Area DEM	KY 10 Meter DEM (DGI, 2014)	Surface elevation for control points and well logs
Study Area KY Oil & Gas Fields	KY Oil & Gas Fields Dataset (KGS, 2014e)	Identification of Oil & Gas fields in study area
Surface Study Area Faults	KY Faults 1:24,000 scale (KGS, 2014b)	Identification of all faults in max extent of analysis area
Modeling Analysis Faults	KY Faults 1:500,000 scale (KGS, 2014b)	Identification of major faults analysis area

Due to the combinations of data from multiple data sources, with varying units and coordinate systems, a unified projected coordinate system was chosen for the creation of the working basemap and analysis environment. All files for the basemap and analysis that were not already in the North American Datum 1983, Kentucky State Plane, single zone, U.S. feet, FIPS 1600 projection were reprojected into the North American Datum 1983, Kentucky State Plane, single zone, U.S. feet, FIPS 1600. This projection uses U.S. feet as the base unit providing easy cross referencing with U.S. petroleum

industry standard gridding systems and distance measurements. This projection is also centered over the entire state of Kentucky, providing a good representation of the centrally located study area.

Many of the files used in this project did not include geographic coordinate systems. These files were joined to the Kentucky well point file, provided by the KGS, based upon a common attribute among the different datasets. The join was either through the KGS record number or the KY permit number, as these were the only two attributes common to all datasets. All of the files used in this project contained data-entry errors, reporting inconsistencies, and/or incomplete records. Each file was cross checked between the KGS and KOGC databases to identify and correct any data issues for the chosen scope of work. Special attention was paid to location and elevation data for each of the 454 well sites for the surface analysis of the New Albany Shale and the Corniferous limestone units. A 10-meter DEM was sampled at each of the surface-control points and the extracted DEM value was compared to the reported surface elevation value for each of the analysis-control points. For any value that differed in elevation by more than 10 feet, the effective resolution of the Kentucky 1:24,000 topographic quarter quadrangle map scale, between the DEM elevation and the reported elevation was checked to determine if the well location was correct or if the elevation was misreported. Each well with a discrepancy was checked against the original surveyed plat map with Carter Coordinates, footage calls, and local landmarks. Then each well was checked against the United States Geological Survey (USGS) 1:24,000 scale topographic quarter quadrangle map to confirm well-site elevation. All of the 62 wells that demonstrated a

discrepancy in elevation over 10 feet were found to be reported elevation errors and therefore the sampled DEM elevation was used in place of the reported elevation.

#### **4.3: Formation Tops**

Formation or stratigraphic tops for this project were identified based upon petrophysical well log characteristics measured by nuclear logging suites, specifically Gamma Ray (GR) logging tools and porosity logging tools. Porosity logs used in this project typically consisted of a combination of neutron density porosity, density porosity and/or bulk-formation density. Figure 4.1 illustrates the typical petrophysical logs used to identify the formation tops used in this analysis. The New Albany Shale, the upper unit bracketing the Devonian Corniferous, exhibits a high GR reading, typically registering higher than 400 API units in the top half of the shale unit and tapering down to a section registering as low as 100 API units before dropping off to a low API count at the top of the Corniferous limestone units. This Upper Devonian shale section is also readily identified by the drastic increase in both neutron-density porosity and density porosity and a decrease in bulk formation density associated with the presence of carbonaceous shale. The basal Devonian Corniferous unit, Ross/Grassy Knob, is identified by the sharp increase of API on the GR log, typically an increase from 20 API units to 50 API units. There is also a slight increase in neutron-density porosity and density porosity as well as a decrease in bulk-formation density as the formations transition from the *clean* basal Devonian carbonates to the *dirty* Silurian carbonates below, marked by the shale-rich Ross/Grassy Knob unit. In a few areas near the eastern side of the study area, the distinction between Silurian and Devonian Corniferous units is difficult. In these instances, the driller's notes and formation logs were consulted for a positive

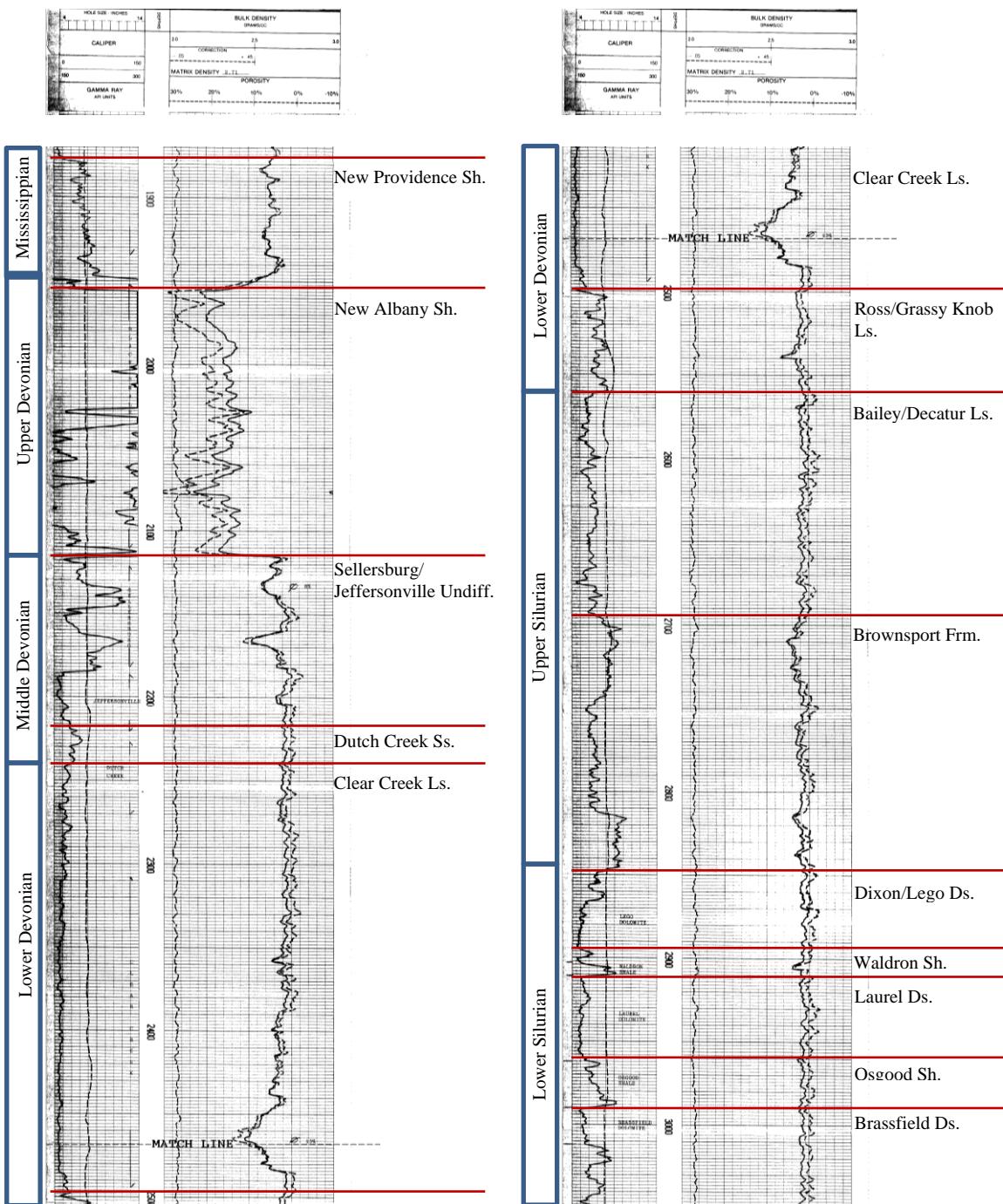


Figure 4.1. Silurian-Devonian Type Log.

This type log shows the typical signature of the Lower Mississippian through the Lower Silurian section. The different formation tops have been assigned based upon Gamma ray, bulk formation density, and neutron density porosity signatures. Each stratigraphic unit top is designated with a Red line and labeled accordingly on the right. The unit ages are labeled with blue blocks on the left. Source: created by author modified from KGS (2014).

identification. For the cases where a distinction between Devonian and Silurian carbonates was difficult to ascertain from the petrophysical logs and accompanying documentation was missing or not available, the formation tops were not assigned.

Due to incomplete and/or bad datasets, several formation tops were not identified based upon petrophysical well-log characteristics or driller's notes and formation reports. These formation tops were derived from a sampled isopach value for either the New Albany Shale or the Corniferous limestone units at the given well location. This sampling was achieved by first generating isopach surfaces, using a kriging interpolation method, for the selected formations from the wells dataset with identified formation tops. Subsequently, individual isopach values for any missing formation are extracted at the individual well positions. Finally, the missing formation top can be calculated from known formation tops and the extracted isopach values.

In some locations, several Corniferous limestone units are absent from the section and the New Albany Shale is positioned directly on top of lower Silurian units. In this case, the thickness of the missing units were recorded as zero thickness and the Silurian section top and the Corniferous tops share the same value for modeling purposes. To prevent confusion within the database and during isopach calculation Corniferous sections are labeled as present or not present and the source of the unit tops are identified.

#### **4.4: Analysis Tools**

For this project, two different spatial statistical analysis tools were used to evaluate the two sets of point data, kernel density estimation (KDE) and surface interpolation. KDE was utilized to analyze all well point data from the KGS oil and gas

well database. Surface interpolation was utilized to generate the 3-D surfaces presented from the 454 selected control points within the study area.

#### *4.4.1: Kernel Density*

KDE is a statistical method used to estimate the relative density or concentration of a large set of observations that would otherwise be difficult to interpret. KDE is often used to identify “hot spots” in spatially related phenomena, such as crime densities, housing/population density, or in this case drilling activity. Xie and Yan (2008) utilized KDE to develop a smooth representation of traffic accidents in a linear network. London (2014) also used KDE to assist in identification of best case locations for geological study. All kernel density estimation models presented in this project are based upon the standard kernel density estimation model with inverse distance weighting and a neighborhood search radius of 1 mile (5280 feet). The results are reported as well densities per square mile.

#### *4.4.2: Surface Interpolation*

All surface interpolation for this project, both structural and isopach surfaces, was generated using kriging interpolation with barriers (KIB). KIB was utilized in constructing structural and isopach surfaces relative to a given set of barriers, in this case faults. This type of kriging helps to visualize the offset generated by faulting and the relative stratigraphic and structural positioning associated with fault displacement. Hickman (2010) utilized a form of KIB to produce all of the gridded surfaces for the work conducted characterizing the structure of the Rough Creek Graben. The barrier shapefile for the KIB interpolation used was a simplified version of the 1:500,000 scale KGS faults shapefile. This simplified file matches the digitized version of the simplified

Kentucky fault systems on Plate #7 from the Hickman (2010) publication. All faults are vertical to near vertical and extend to basement or near basement, so for this model, all *simplified* faults are treated as vertical basement faults. The KIB prediction models were optimized and set to a fifth order polynomial surface with a power of one and a ridge of fifty.

## **Chapter 5: Results**

### **5.1: Kernel Density**

KDE modeling was used to examine the drilling activity for the south central Kentucky study area. The KGS oil and gas well file was examined and sorted based upon three attributes: original well class, formation at total depth (TD), and deepest pay. To observe the analyses in a meaningful manner they would have to be divided into four categories for mapping and analysis purposes: total surface drilling activity, surface drilling activity, targeted drilling activity, and production horizons. Total surface drilling activity is the surface expression of all drilling independent of depth of penetration or well class. Surface drilling activity is the subset of oil and gas wells within the total surface drilling activity set. Targeted drilling activity is the surface drilling activity subset divided by formation at TD, separating out Mississippian/Pennsylvanian, Devonian, Silurian, and Cambrian/Ordovician age target formation. Production horizons are the surface drilling activity subset divided by deepest pay, separating out the Devonian and Silurian age deepest pays.

#### *5.1.1: Drilling Activity*

Surface-drilling activity, the sum of all wells penetrating the surface, is derived from all wells in the study area, including: water supply wells, disposal wells, service wells, monitoring wells, injection wells, storage wells, oil wells, gas wells, and combination oil and gas wells. Surface drilling activity in the south-central Kentucky study area is concentrated along the southern flank of the Rough Creek Graben, just south of the Pennyrite Fault Zone, as seen in Figure 5.1. There is also extensive drilling activity along the southeastern section of the study area with most of this drilling activity

positioned across the Warren County line in Allen and Barren counties. There is also an isolated pocket of drilling activity in northwestern Edmonson and south central Grayson counties.

Surface-drilling activity is then isolated to just hydrocarbon drilling activity, derived from all wells in the area classified as either oil, gas, or combination oil and gas upon well completion. This subset of wells can be used as an indication of the present limits of developed oil and gas fields within the study area. Hydrocarbon-drilling activity for the Warren, Butler, and Edmonson County area is concentrated along the central and southeastern sections of the study area with minor activity in the northern and western portions of the study area. This distribution is clearly visible in Figure 5.2, with the area of high well bore concentration in dark brown. When wells are classified based upon hydrocarbon type, oil or gas, and re-evaluated, Figures 5.3 and 5.4, a clear separation in produced fluid type becomes apparent. The majority of the drilling activity related to oil production is concentrated south of the Pennyrile Fault Zone in Butler, Edmonson, and Warren counties. The regions with the highest oil well concentration correspond with known producing fields. These fields are generally considered comingled fields with production derived from multiple hydrocarbon pay zones. The majority of production from these fields is derived however from Devonian Corniferous strata. The drilling activity related to gas production parallels the drilling activity associated with oil production. There is a large concentration of gas-drilling activity in the northern portion of the study area. There is also a concentration of gas-drilling activity in the southeastern portion of Edmonson County. The remaining gas drilling activity appears to be associated with faults in the Pennyrile Fault Zone. Just like the drilling activity associated with oil

production, the drilling activity associated with gas production corresponds to known gas fields. The majority of this gas production is derived from pay zones within the New Albany Shale or associated with faults in the area that provide an easy hydrocarbon migration pathway to the overlying strata.

When surface-drilling activity is superimposed on a map of the current KGS-known oil and gas field map, as seen in Figure 5.5, a clear correlation can be made. Drilling activity tends to occur at, or adjacent to, previously producing well locations. In many places the KD models do not match up with the known oil and gas fields indicating that modern drilling has outpaced the published literature providing insight into new producing areas that have yet to be discovered.

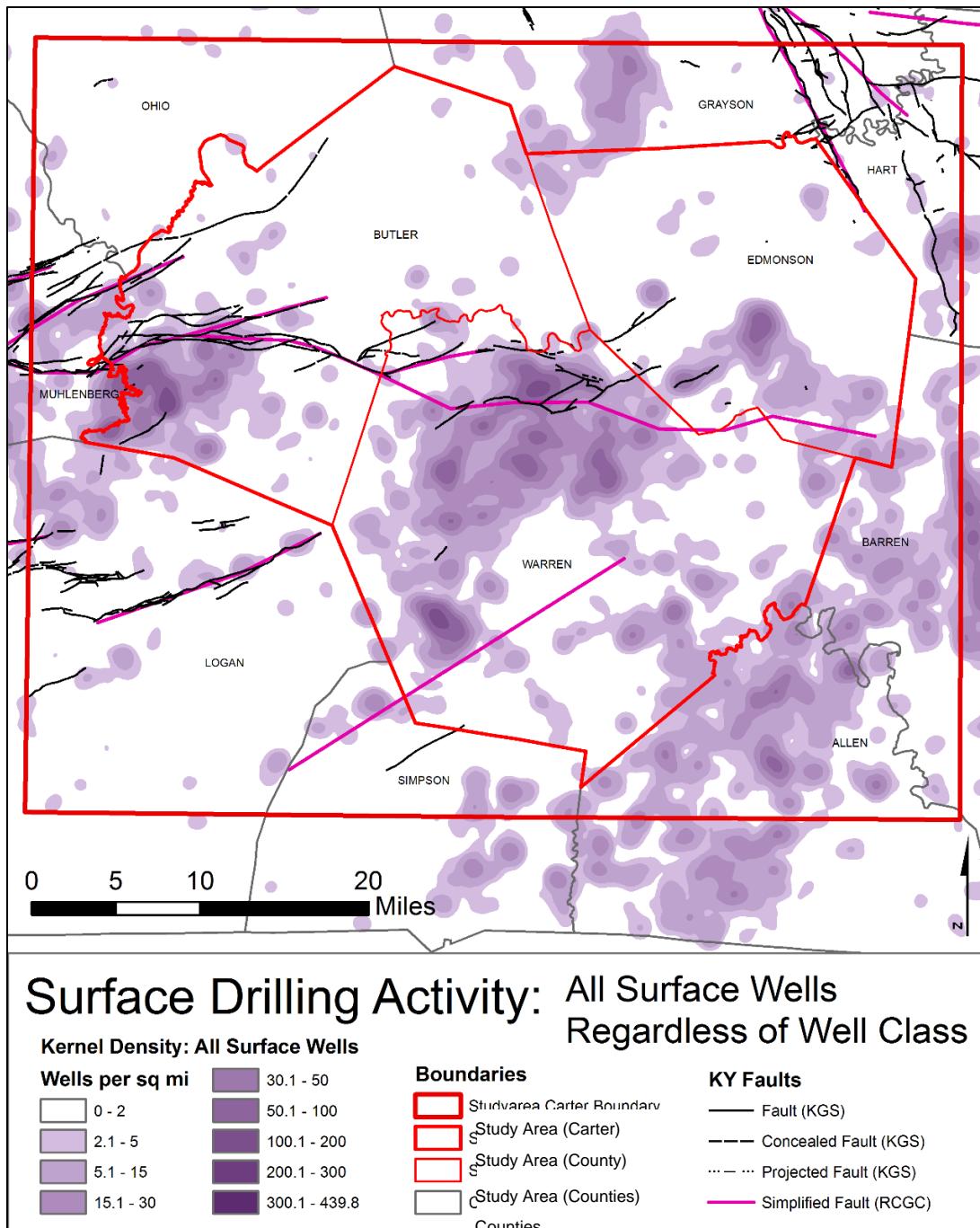


Figure 5.1. South Central Kentucky Drilling Activity: All wells. A kernel density estimation map of all wells within the study area regardless of designation, including: oil, gas, water, service, monitoring, injection, and disposal wells. Note the concentration of drilling activity below the Pennyrite Fault Zone traversing through the center of the study area. Also note the large zones with little to no drilling activity in the northern half and southwestern corner of the study area. The darkest portions of the map represent areas of greatest well concentration. Source: created by author, basemap data from KGS (2014).

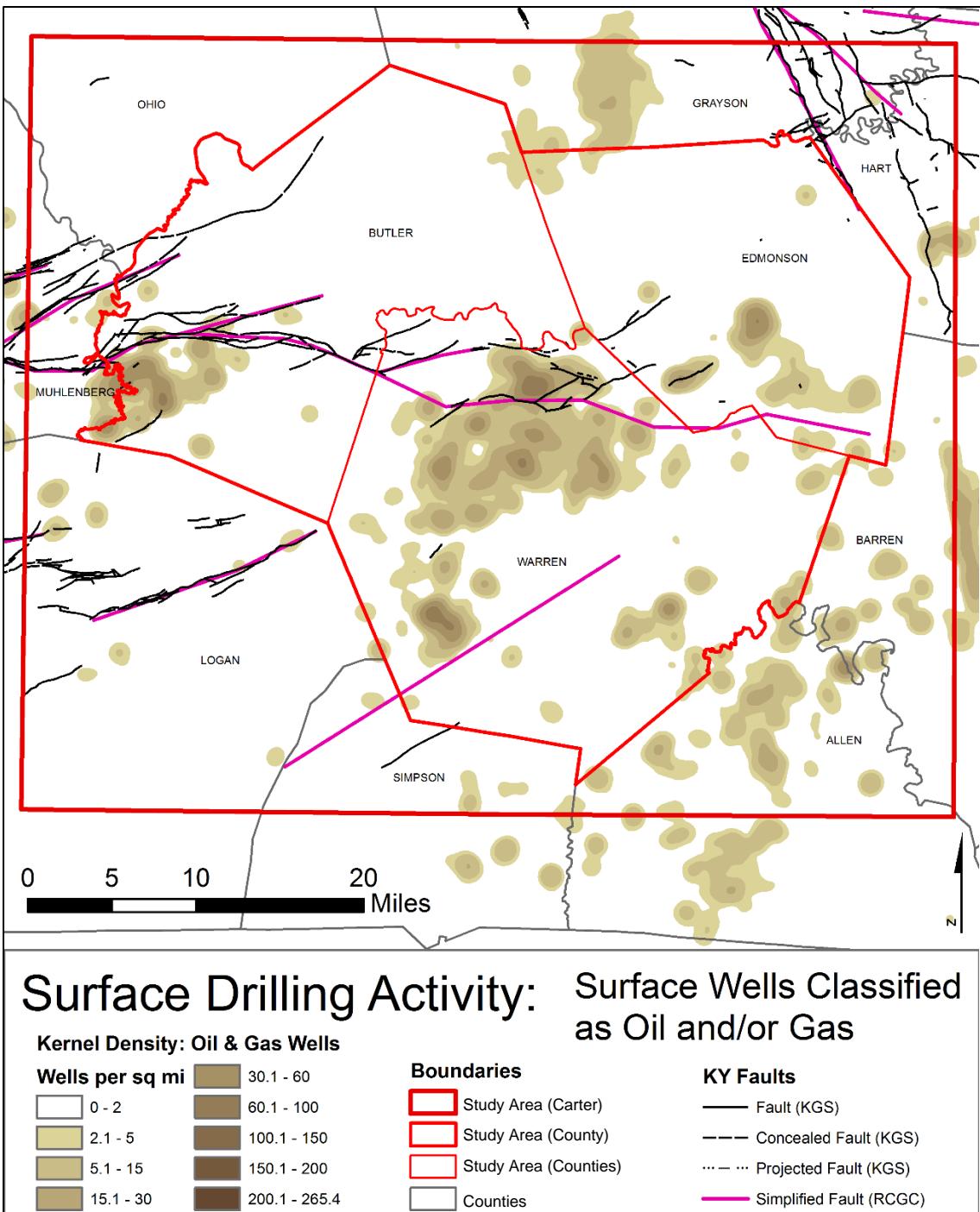


Figure 5.2. South Central Kentucky Drilling Activity: All Producing Wells. Kernel density estimation map of all wells within the study area that are designated as oil and/or gas wells during initial well completion. Note the concentration of drilling activity below the Pennyroyal Fault System in center of study area as well as large zone in the northern portion of the study area. The relatively darker portions of the map represent areas of greatest well concentration. These areas correspond to known commercial oil and gas fields. Source: created by author, basemap data from KGS (2014).

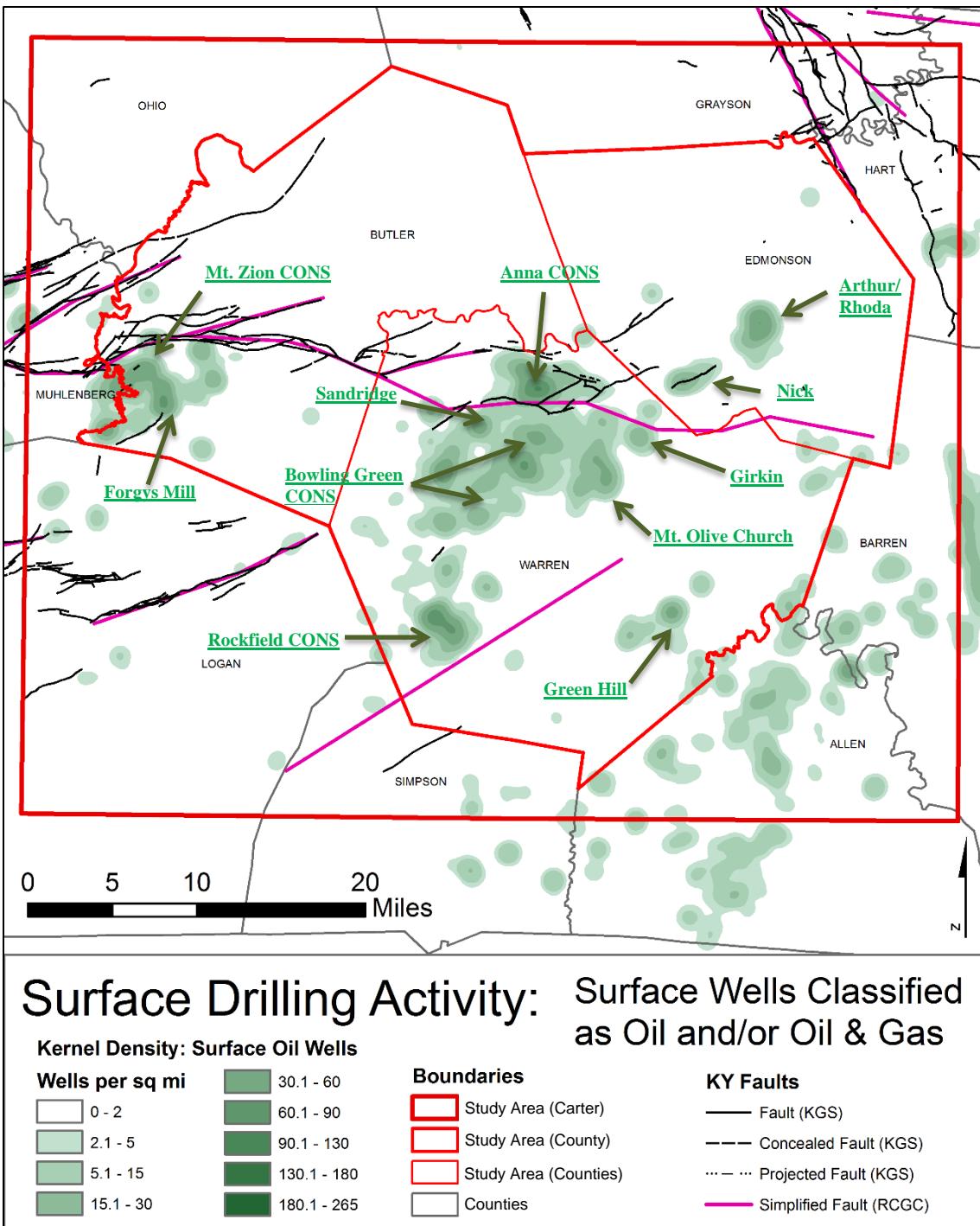


Figure 5.3. South Central Kentucky Drilling Activity: Oil.

Kernel density estimation map of all wells within the study area that are designated as oil wells during initial well completion. Note the concentration of drilling activity below the Pennyrite Fault System traversing the center of the study area, as well as the sporadic zone in the southeastern portion of the study area. The relatively dark portions of the map represent areas of greatest well concentration. These areas correspond with known commercial oil fields. Source: created by author, basemap data from KGS (2014).

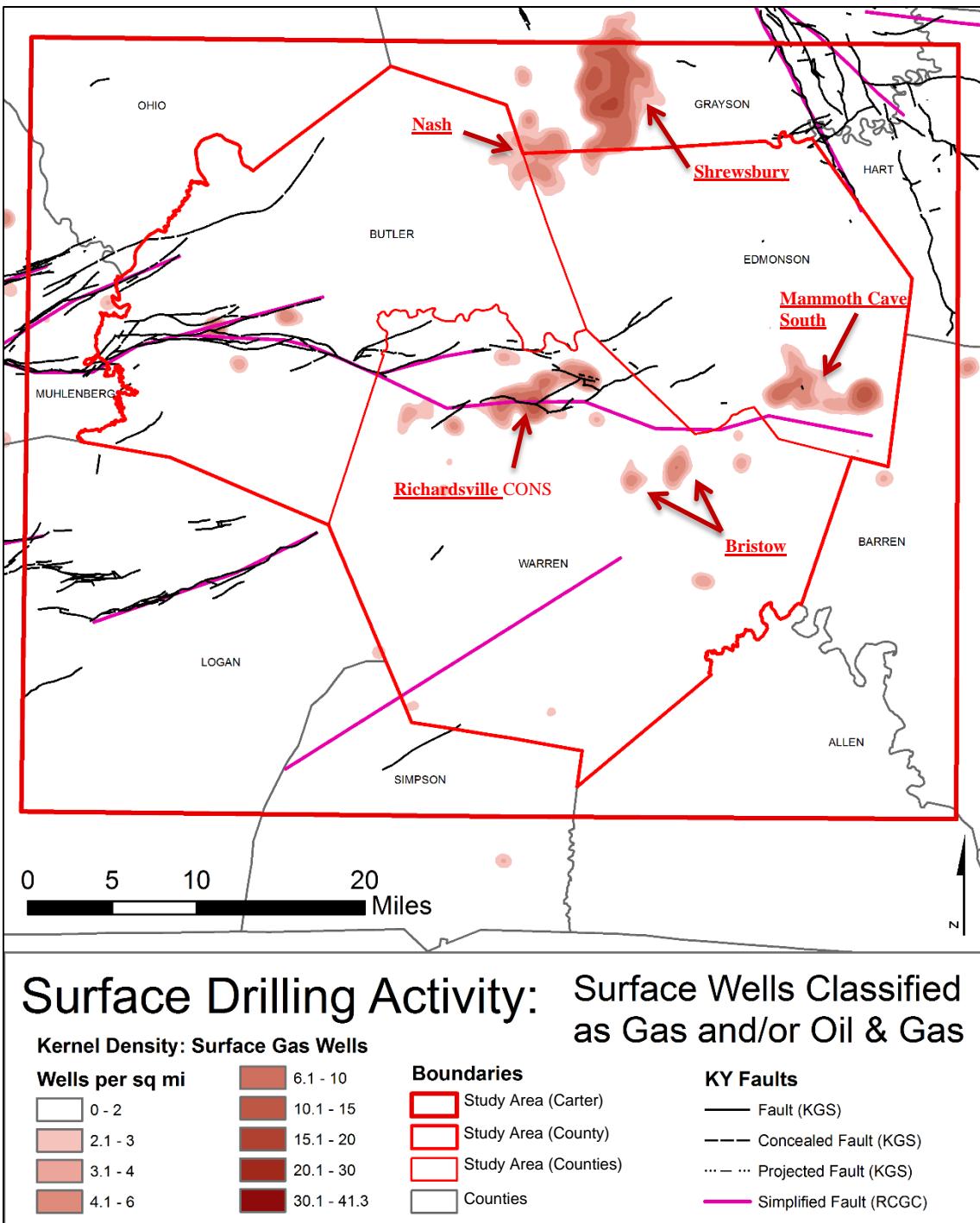


Figure 5.4. South Central Kentucky Drilling Activity: Gas.

Kernel density estimation map of all wells within the study area that are designated as oil wells during initial well completion. Note the sporadic distribution of drilling activity along the Pennyroyal Fault System traversing the center of the study area, as well as the large zone in the northern portion of the study area. The relatively darker portions of the map represent areas of greatest well concentration. These areas correspond with known commercial gas fields. Source: created by author, basemap data from KGS (2014).

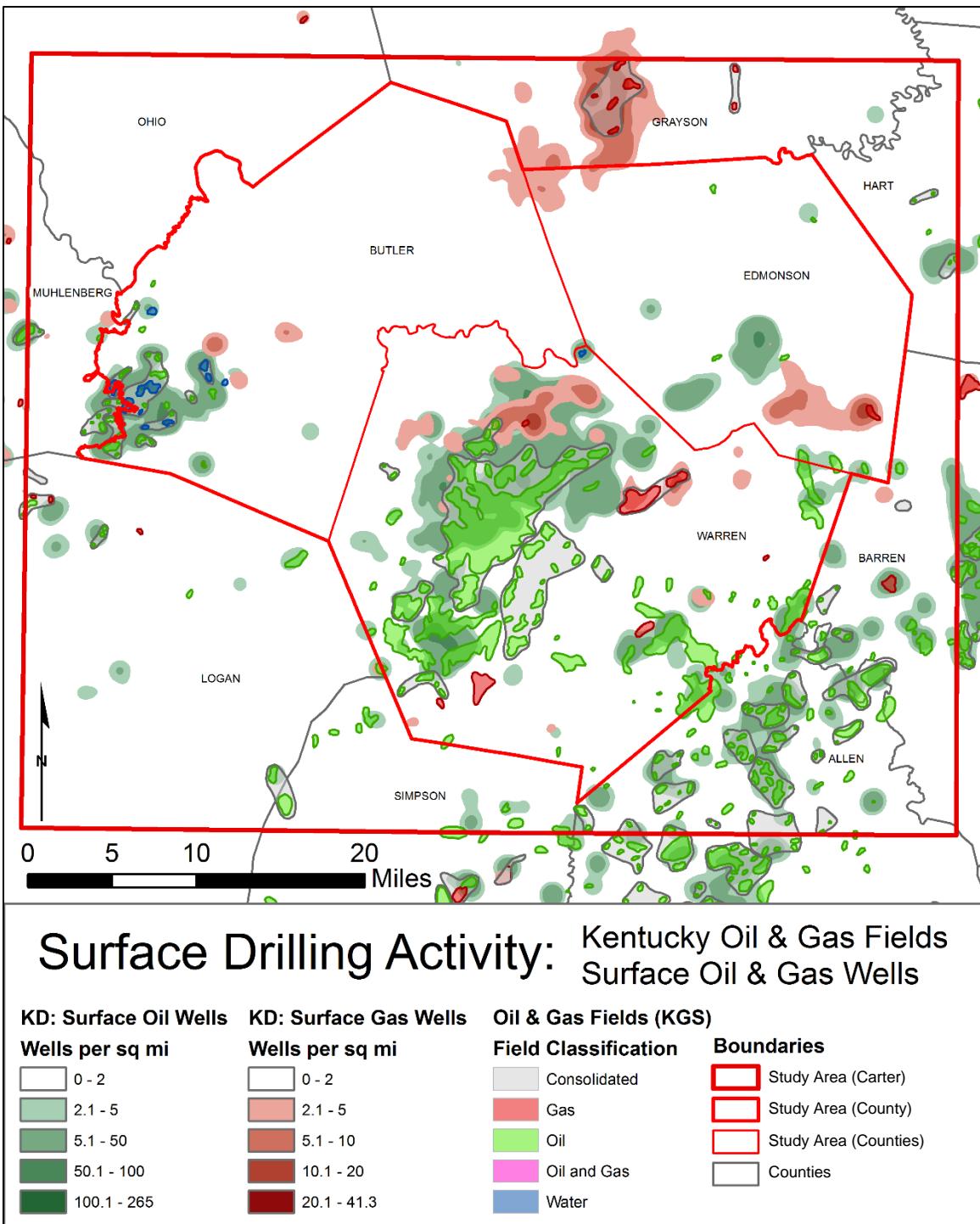


Figure 5.5. Surface Drilling Activity vs. Oil and Gas Fields.

Kernel density estimation map of Surface Oil and Gas Drilling Activity plotted against the KGS published oil and gas fields dataset. Note that modern commercial oil and gas fields no longer match known published data on Kentucky oil and gas field distribution, however the KD modeled field distribution is strikingly similar to published data. Source: created by author, basemap data from KGS (2014).

### *5.1.2: Drilling Horizons*

When surface-drilling activity is classified based upon target formation and then mapped, a dominant target system is easily identified. There is abundant Pennsylvanian and Mississippian drilling activity, but most of this activity occurs further to the west or is positioned above known Devonian production horizons to exploit any pools developed from upward migration of Devonian hydrocarbon. Wells targeting the Mississippian and Pennsylvanian are typically concentrated south of the Pennyrile Fault Zone in western Butler County and north central Warren County, with some additional concentrations in southern Grayson County, as shown in Figure 5.6. Devonian drilling activity dominates the study area, covering a large portion of the eastern half of the study area. Most of the activity is concentrated in northern and central Warren County south of the Pennyrile Fault Zone. Devonian drilling activity also appears as a crescent along the southeastern edge of Warren County extending into Simpson, Barren, and Allen counties. There are also large clusters of Devonian drilling activity in central and southwest Edmonson County as well as southern Grayson, northeastern Butler, and northwestern Edmonson counties, as shown in Figure 5.7. Silurian target formations are typically clustered in the eastern one-third of the study area, as shown in Figure 5.8. This drilling activity is suspicious, due to misclassification of Devonian Corniferous and Silurian Corniferous limestone units. The Cambrian and Ordovician drilling activities are concentrated to the far east of the study area. This Cambrian and Ordovician trend is thought to be fault related and an isolated trend within the study area, as shown in Figure 5.9. The overall succession of drilling-target systems, increasing in unit age to the east, is a result of the overall shallowing of the sediments along the Illinois Basin flanks and truncation of older

units against the emergent Cincinnati Arch to the east.

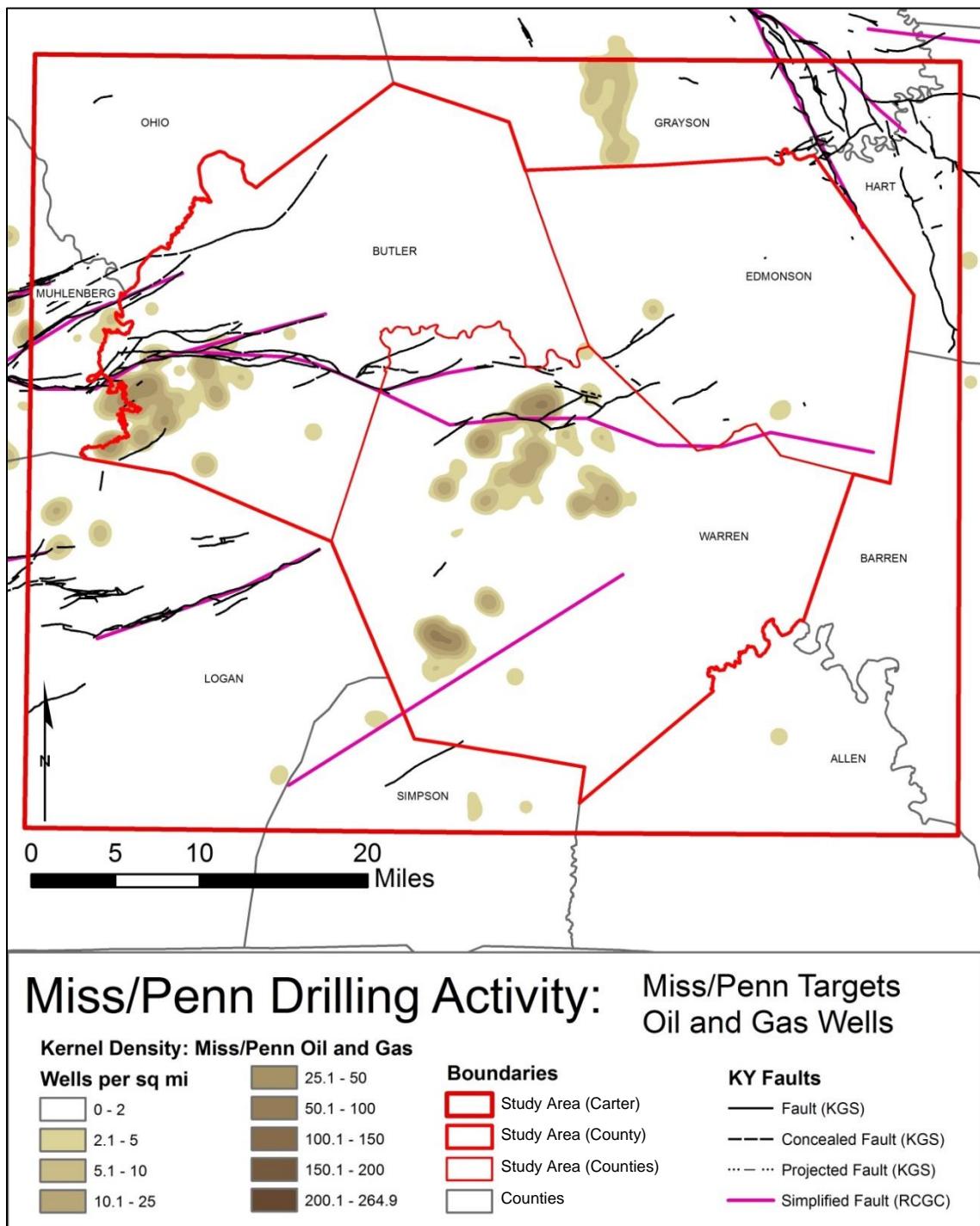


Figure 5.6. Mississippian and Pennsylvanian Drilling Targets.

Kernel density estimation map of the Mississippian and Pennsylvanian oil & gas drilling targets. Note that the Mississippian and Pennsylvanian targets tend to be located to the western and central portions of the study area. Source: created by author, basemap data from KGS (2014).

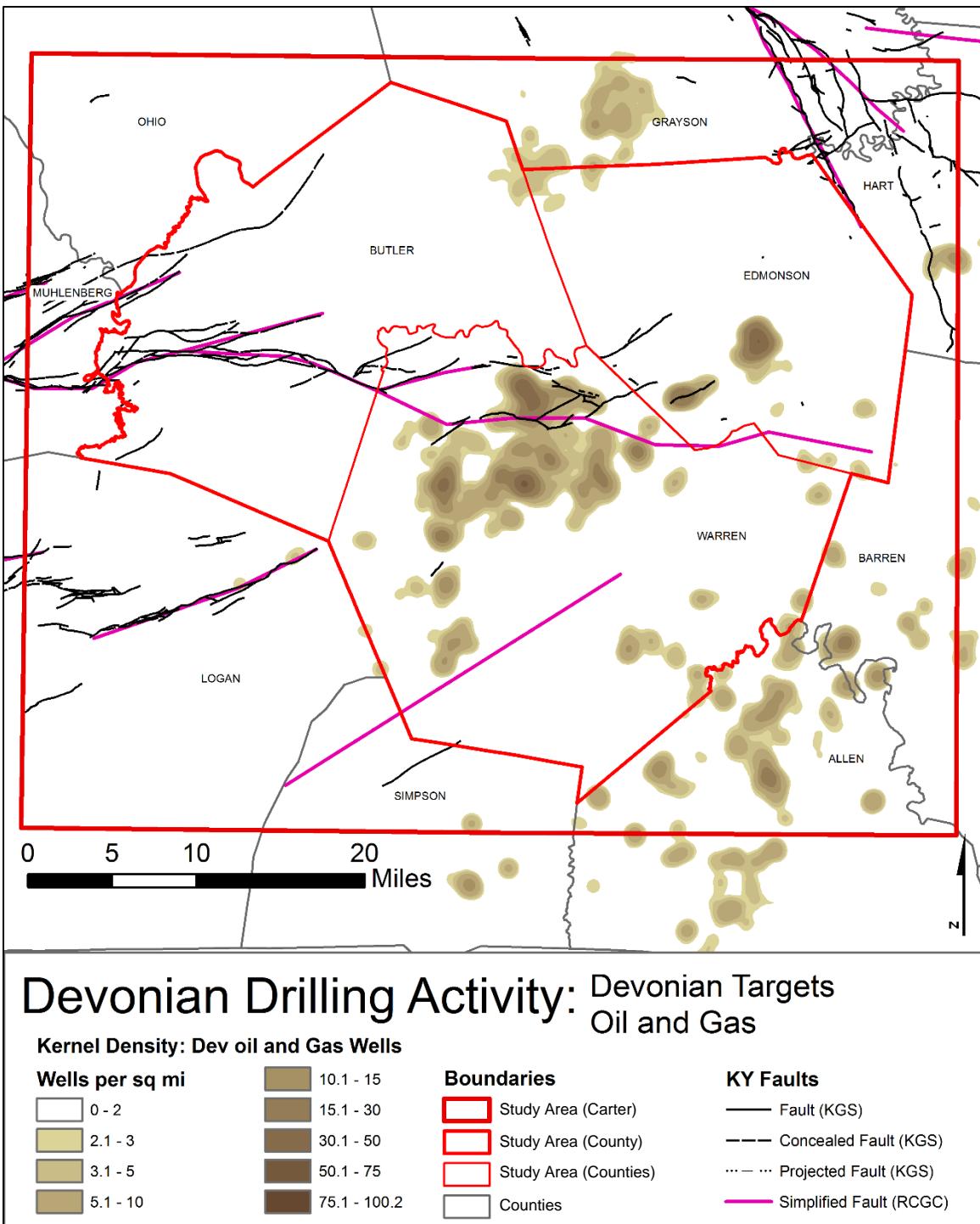


Figure 5.7. Devonian Drilling Targets.

Kernel density estimation map of the Devonian oil and gas drilling targets. Note that the Devonian targets tend to be located to the central portion of the region adjacent to the fault systems and eastern corner of the study area. Source: created by author, basemap data from KGS (2014).

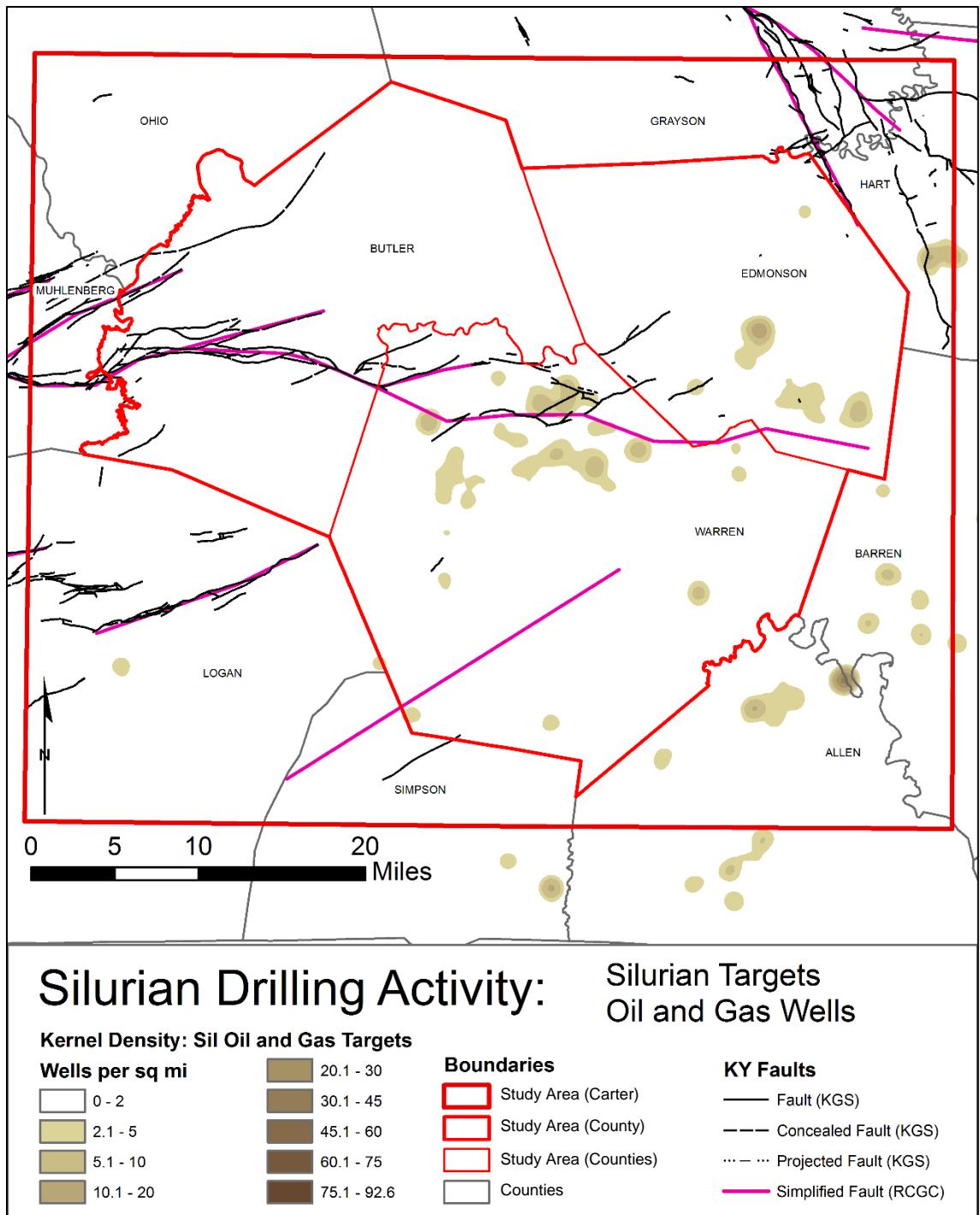


Figure 5.8. Silurian Drilling Targets.

Kernel density estimation map of the Silurian oil and gas drilling targets. Note that the Silurian targets tend to be located to the central and eastern portions of the study area, but this activity is minor when compared to the Pennsylvanian, Mississippian, and Devonian targeted drilling activity. Source: created by author, basemap data from KGS (2014).

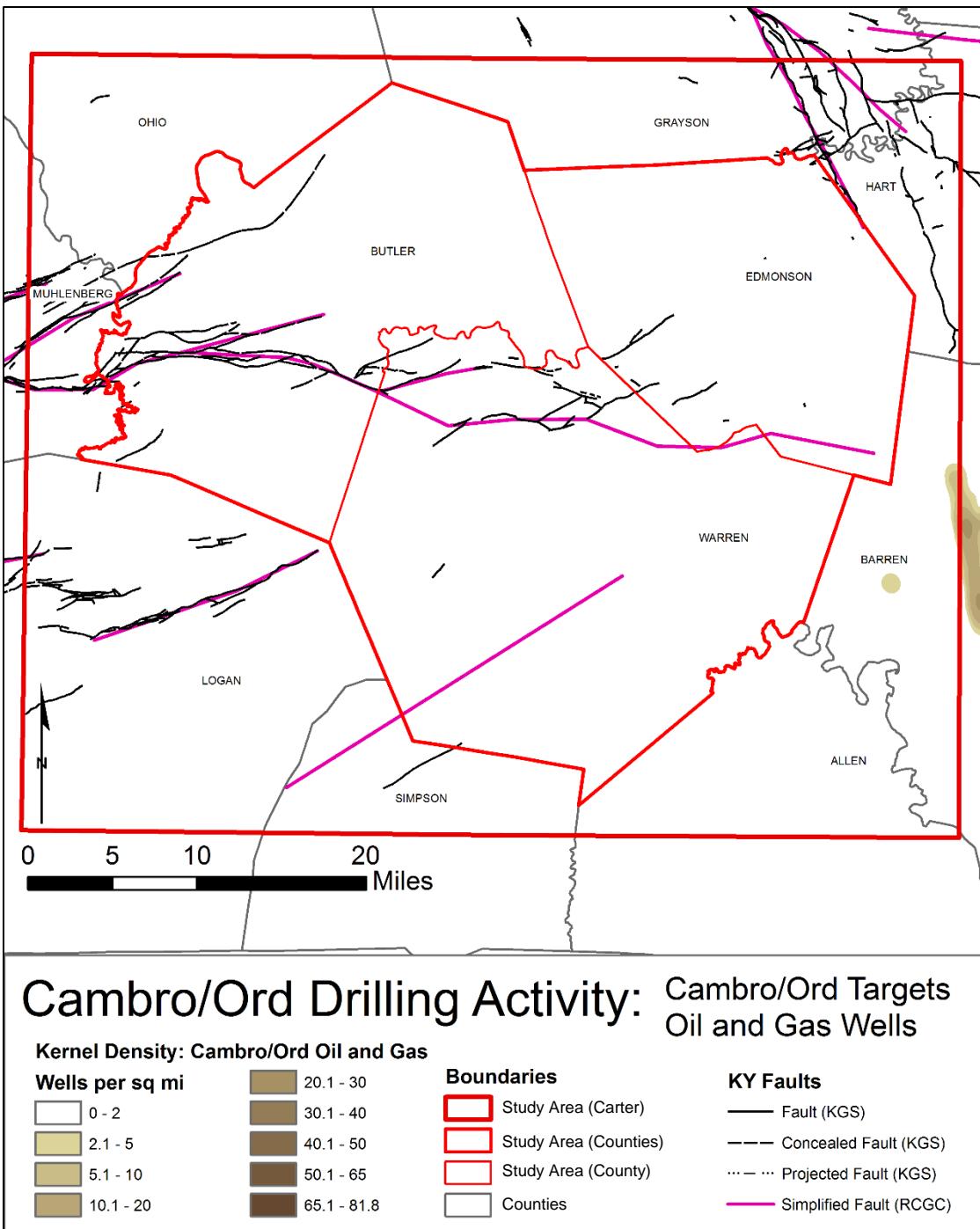


Figure 5.9. Cambrian and Ordovician Drilling Targets.  
 Kernel density estimation map of the Ordovician and Cambrian oil and gas drilling targets. Note that the Cambrian-Ordovician targets are only located to the eastern portions of the study area, and that this targeted drilling activity is minor when compared to the Pennsylvanian, Mississippian, and Devonian targeted drilling activity. Source: created by author, basemap data from KGS (2014).

### *5.1.3: Productive Devonian Horizons*

Productive Devonian drilling activity is the subset of oil and gas wells derived from the KGS oil and gas well dataset with reported Devonian stratigraphic units identified as the deepest pay zones. Figure 5.10 illustrates the distribution of oil and gas wells that produce from the Devonian strata. The results are similar to the surface-drilling activity for oil and gas, with drilling activity concentrated on the southern flank of the Pennyrite Fault Zone in Warren County. There are also two significant pockets of drilling activity, one to the north in western Edmonson County and southern Grayson County, and the other to the southeast in Allen and Barren counties flanking southeastern Warren County.

When the Devonian wells are classified and analyzed based upon hydrocarbon type a clear division is observable. The Devonian oil drilling activity is dominantly associated with the southeastern portion of the study area (Figure 5.11). Most of the Devonian oil targets are in northern Warren and central Edmonson counties and are concentrated in the structurally higher sections of the southern flank along the Pennyrite Fault Zone and to the northeast along the southeastern extension of the Rough Creek Graben. There is also significant activity in the southeastern portion of Warren County and along the basin flank in Allen and Barren counties. Devonian gas targets are isolated to the northwestern portion of Edmonson County and south central Grayson County (Figure 5.12). This gas-drilling activity is typically associated with a regional structural high along the axis of the Moorman Syncline within the Rough Creek Graben and is derived from the Devonian New Albany Shale. There are a few isolated pockets of gas drilling activity associated with the Pennyrite Fault Zone but these are minimal in

comparison with the gas activity in the northern portion of the study area.

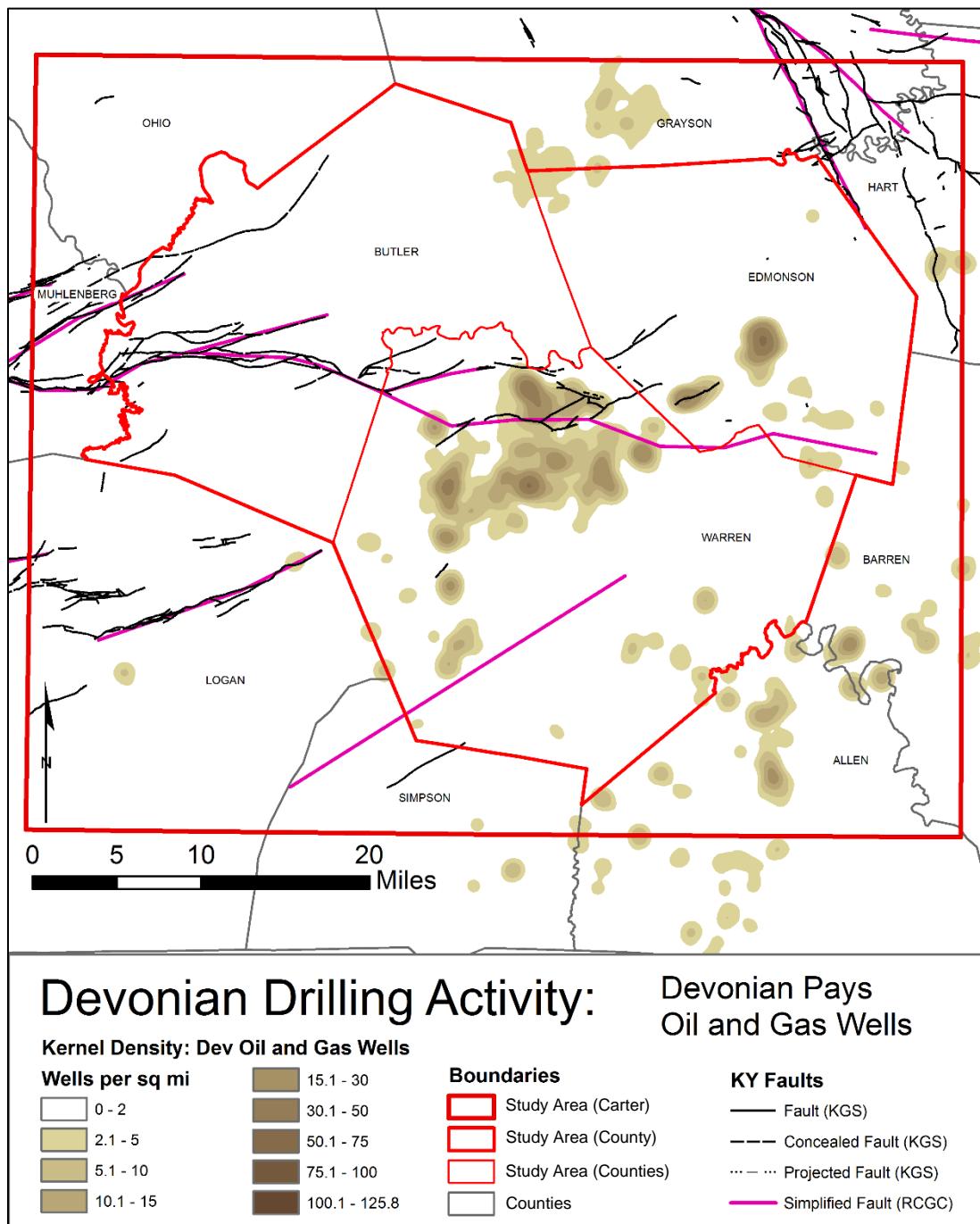


Figure 5.10. Devonian Drilling Activity: Oil and Gas.

Kernel density estimation map of all wells within the study area that are designated with their deepest pay zone as Devonian. The relatively darker portions of the map represent areas of greatest well concentration. These areas correspond with known oil and gas fields with production derived from the Devonian age strata. Source: created by author, basemap data from KGS (2014).

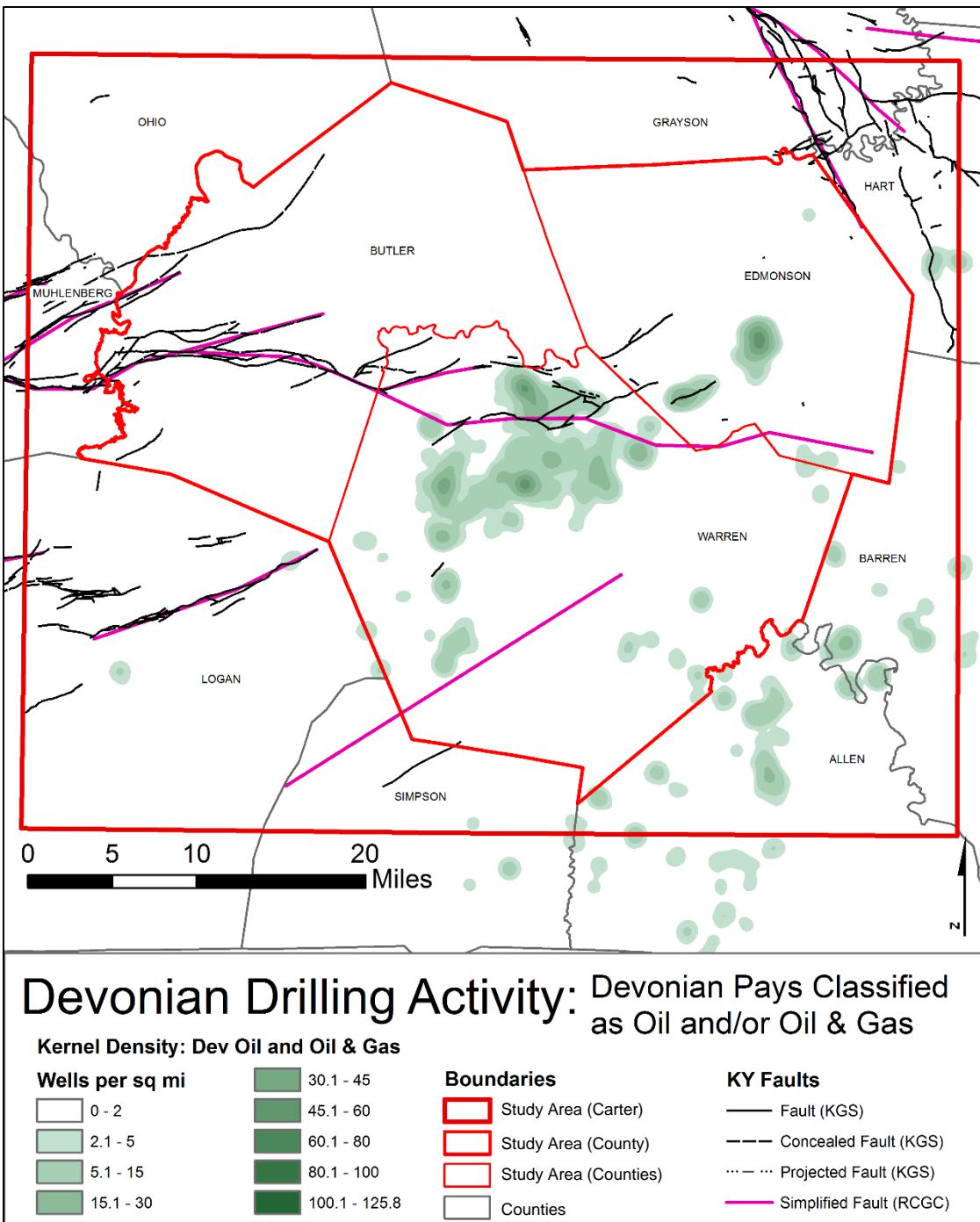
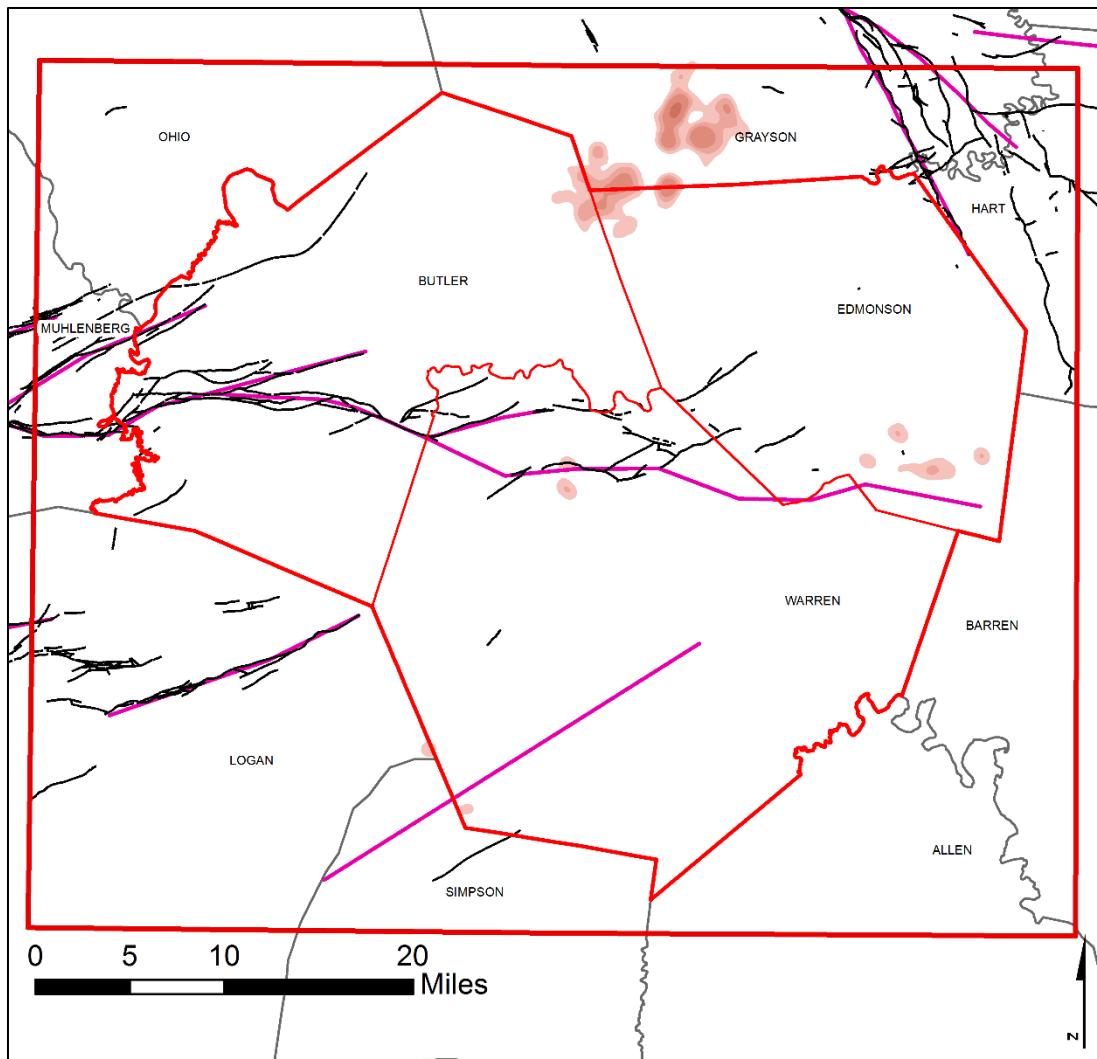


Figure 5.11. Devonian Drilling Activity: Oil.

Kernel density estimation map of the oil wells within the study area that are designated with their deepest pay zone as Devonian in age. The relatively darker portions of the map represent areas of greatest well concentration. These areas correspond with known oil fields with production derived from the Devonian age strata. Note that the majority of the oil drilling activity associated with Devonian pay zones is located south of the Pennyville Fault Zone. Source: created by author, basemap data from KGS (2014).



## Devonian Drilling Activity: Devonian Pays Classified as Gas and/or Oil & Gas

Kernel Density: Dev Gas and Oil & Gas

Wells per sq mi

0 - 2	6.1 - 8
2.1 - 3	8.1 - 10
3.1 - 4	10.1 - 12.5
4.1 - 6	12.6 - 15

15.1 - 17.5	Boundaries
	Studyarea Carter Boundary
	S Study Area (Carter)
	S Study Area (County)
	C Study Area (Counties)

KY Faults	
—	Fault (KGS)
- - -	Concealed Fault (KGS)
- · -	Projected Fault (KGS)
—	Simplified Fault (RCGC)

Counties

Figure 5.12. Devonian Drilling Activity: Gas.

Kernel density estimation map of the gas wells within the study areas that are designated with their deepest pay zone as Devonian in age. The relatively darker portions of the map represent areas of greatest well concentration. These areas correspond with known gas fields with production derived from the Devonian age strata. Note that the only large concentration of gas drilling activity is in the north central portion of the study area away from any major oil drilling activity. Source: created by author basemap data from KGS (2014).

## **5.2: Kriging Surfaces**

KIB was used to generate the modeled subsurface structural surfaces. Interpolated surfaces were derived from the 454 wells containing either well logs, driller's notes, and/or sample logs from the KGS oil and gas data library. Barriers used for kriging in this project are simplified scale faults generated by the KGS and the Rough Creek Graben Consortium (RCGC). All faults are modeled as vertical basement faults and the modeling area extends one Carter grid past the presented surface to prevent modeling edge effect.

KIB was also used to interpolate the individual stratigraphic thicknesses (isopach) of each modeled unit. The same simplified 1:500,000 KGS faults dataset utilized for the structural interpolation surface, was utilized for the input barriers during interpolation of the isopach surfaces. These isopach values were extracted at all of the project control points. When stratigraphic unit data were absent, the extracted isopach data were used in conjunction with known well-log values to calculate the given subsurface elevation of the missing well log data.

Table 5.1 identifies the total number of control points used to generate all of the KIB interpolated surfaces. This table also identifies the number of stratigraphic tops picked from well logs and the number of stratigraphic tops derived from extraction isopach values. These extracted values were then added to known stratigraphic tops picked from well logs to develop the appropriate stratigraphic top for the missing stratigraphic interval.

**Table 5.1: Structure Control Point**

Surface Name	Control Points	Well log Picked	Isopach Extraction
New Albany Shale Top	454	453	1
Devonian Corniferous Top Basal New Albany shale	454	429	25
Clear Creek Limestone Top	454	428	26
Ross/Grassy Knob Top	454	237	217
Silurian Corniferous Top	454	190	264
Waldron Shale Top	454	107	347

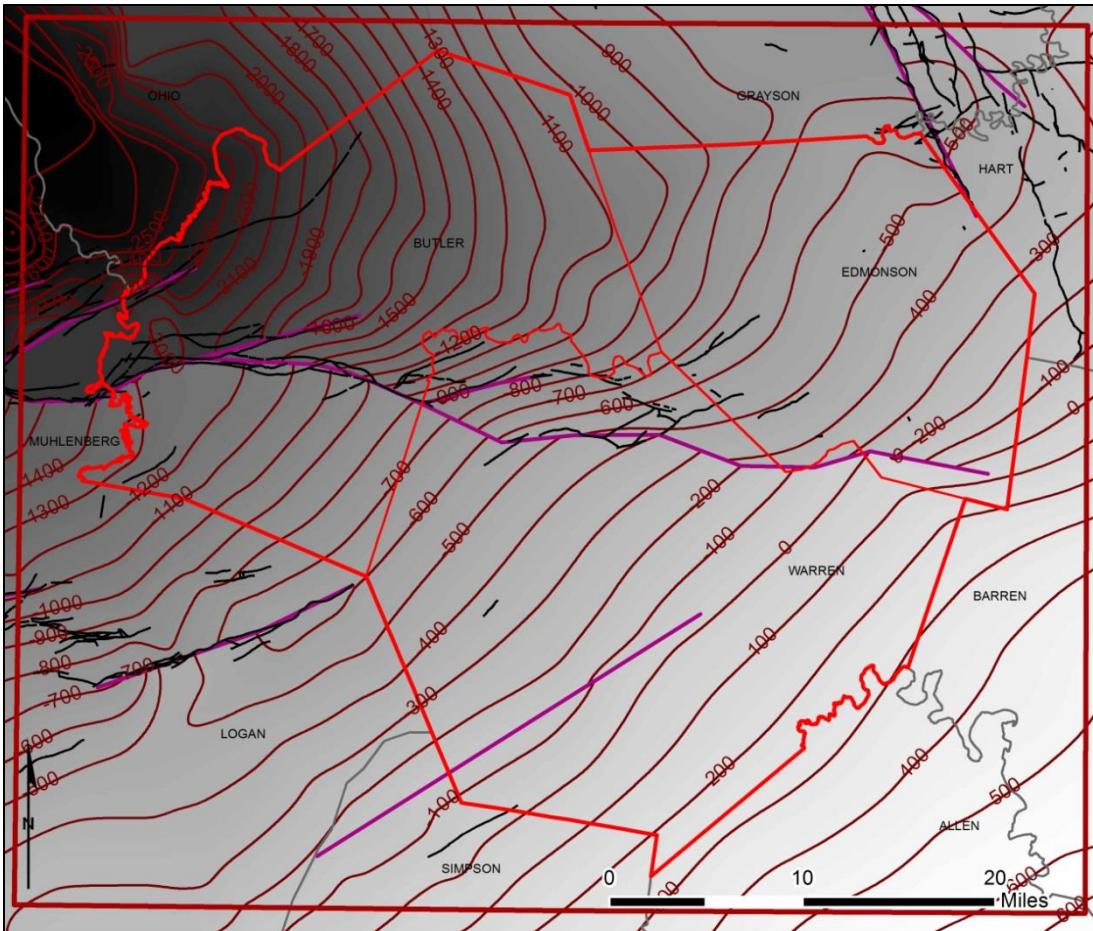
### 5.2.1: Overall Structure

Typically all units thicken to the northwest following the flank of the Illinois basin before crossing the Pennyrile Fault Zone into the Rough Creek Graben. Most units are very thin to absent in the southeastern corner south of the Pennyrile Fault Zone, with thicknesses ranging from nothing (0 feet) to less than 50 feet thick. In the western portion of the study area, south of the Pennyrile Fault Zone, the units are at their typical thickest, given uninterrupted deposition and ample accommodation space along the flank of the Illinois Basin. Traversing over the Pennyrile Fault Zone into the Rough Creek Graben, accommodation space increases notably to the west, allowing individual units to thicken well beyond the expected thicknesses seen in locations to the south of the Pennyrile Fault Zone or north of the Rough creek Graben. The significance of this deepening within the Rough Creek Graben is that there is greater thermal maturation of thicker organic material. Such thermally mature organics are juxtaposed against highly porous limestone units that are stratigraphically older but structurally higher, yielding prospective targets.

The positioning of the Rough Creek Graben and the laterally expansive New Albany Shale also provides a system of truncating sub-shale Silurian-Devonian Corniferous Limestone units, with sub-shale Corniferous units, increasing in stratigraphic age to the east, directly in contact with the basal New Albany Shale. These Illinois Basin flank/truncating units form an eastern offset or step back pattern within the bounding faults of the Rough Creek Graben. To the north of the Rough Creek Fault Zone and to the south of the Pennyrite Fault Zone, the expected southeastern basin arch follows the patterns shown along the remainder of the Illinois Basin margin.

#### *5.2.2: New Albany Shale Structure*

Figure 5.13 shows the structure drawn on the top of the New Albany Shale. Refer to table 5.1 for control point details. This surface is based on the high GR signature related to the top of the organic rich shale. In some locations the shale is purely Upper Devonian and in others it is lower Mississippian in age. An organic rich shale unit (upper portion) and an argillaceous limestone and shale mix (basal portion) comprise the New Albany Shale. This upper organic rich shale unit trends across the entire study area uninterrupted with the lower mixed layer thinning to the east. The overall structure demonstrates a gentle slope to the northwest below the Pennyrite Fault Zone of 40 ft. per mile. Upon passing the Pennyrite Fault Zone, entering the Rough Creek Graben, the surface steepens with strata sloping toward the west from an average of 40 ft. per mile at the eastern end to 60 ft. per mile on the far western end. The shallowest portion of the New Albany Shale is roughly 300 feet above mean sea level in the southeast corner and the deepest portion is 2500 feet below mean sea level in the northwest corner.



## Structure Contour: New Albany Shale Top

### Structural Contours

— 100 ft Interval

### KY Faults

- Fault (KGS)
- - - Concealed Fault (KGS)
- ... - - Projected Fault (KGS)
- Simplified Fault (RCGC)

### Boundaries

- Study Area (Carter Extent)
- Study Area (County Extent)
- Study Area (County)
- Counties

50X Vertical Exaggeration

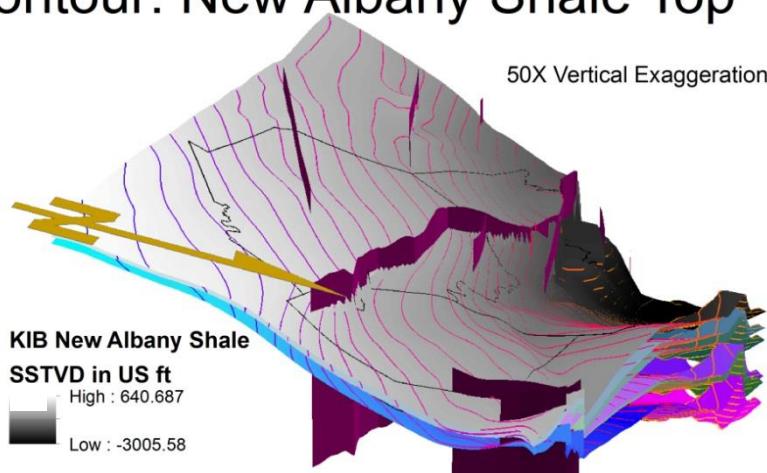


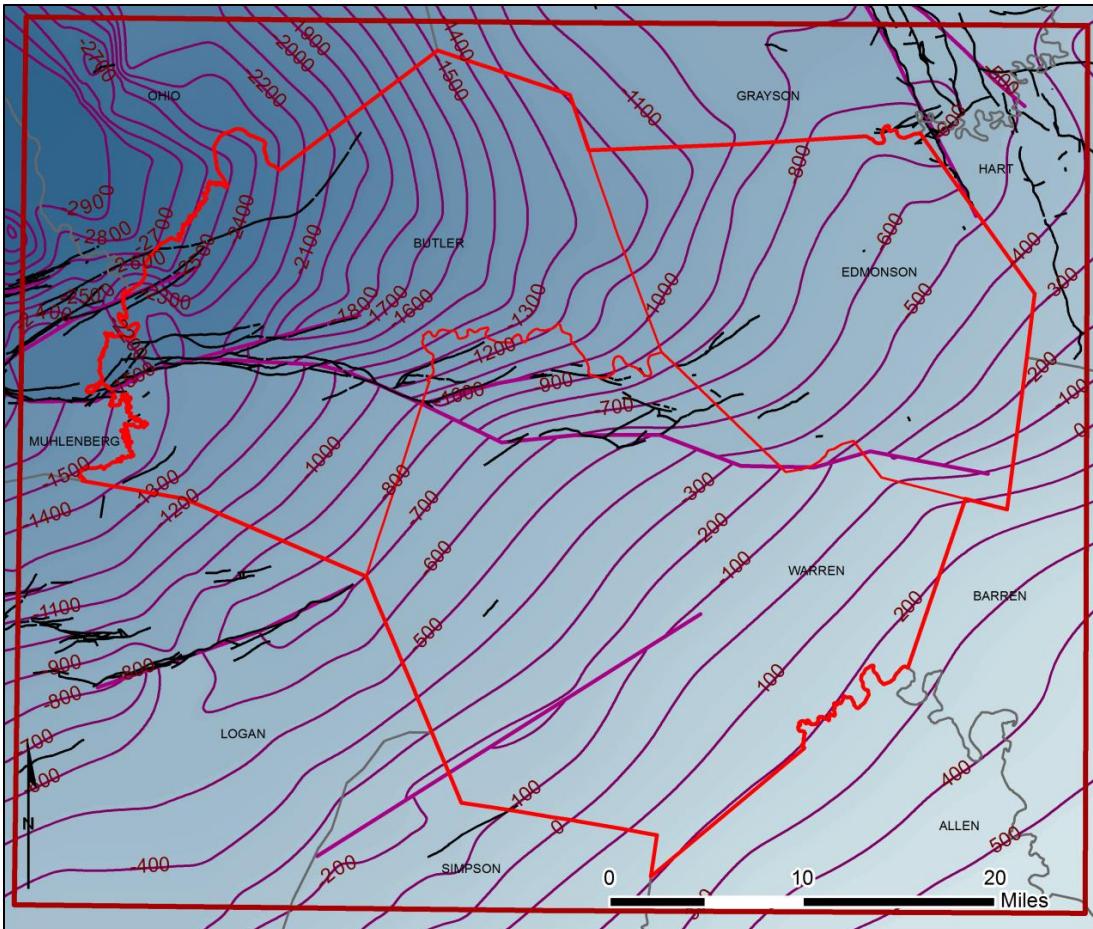
Figure 5.13. Structure Contour Map: New Albany Shale Top.

Inset map showing oblique view of study area in 3-D with 50X vertical exaggeration with north arrow to the right set level to vertical datum. Note: the dramatic change in structure north of the Pennyrile Fault Zone, identifying the steep drop associated with the Rough Creek Graben. Source: created by author, basemap data from KGS (2014).

The Pennyrile Fault Zone acts as a major structural hinge for the Rough Creek Graben in the study area. The Moorman Syncline is a relatively high spot in the central portion of the Rough Creek Graben oriented southeast-northwest between Butler and Edmonson counties.

#### *5.2.3: Devonian Corniferous Structure*

Figure 5.14 illustrates the structure drawn on the base of the New Albany Shale (i.e. the top of the Devonian Corniferous Limestone units). This surface coincides with the tops of the Sellersburg/Jeffersonville Limestone units at the base of the New Albany Shale within the study area; refer to table 5.1 for control point details. This structure mimics the top of the New Albany Shale, as shown in Figure 5.13 with a similar gentle slope of 40 feet per mile to the northwest below the Pennyrile Fault Zone (compare Figures 5.13 and Figure 5.14). The Sellersburg and Jeffersonville Limestone and Dutch Creek Sandstone units comprise the Upper Devonian Corniferous for this study. Upon crossing the fault zone the structure slopes dramatically to the west ranging from 40 feet per mile in the eastern portion of the study area to 60 feet per mile in the western section. The base of the New Albany Shale at its shallowest position is about 550 feet above mean sea level in the southeastern corner and 3000 feet below mean sea level at its deepest in the northwestern corner of the mapping area. The Pennyrile Fault Zone continues to act as the major structural hinge for the Rough Creek Graben in the study area. The Moorman Syncline is still apparent within the center of the Rough Creek Graben oriented northeast-southwest across eastern Butler, and western Edmonson counties.



## Structure Contour: Dev. Corniferous Top

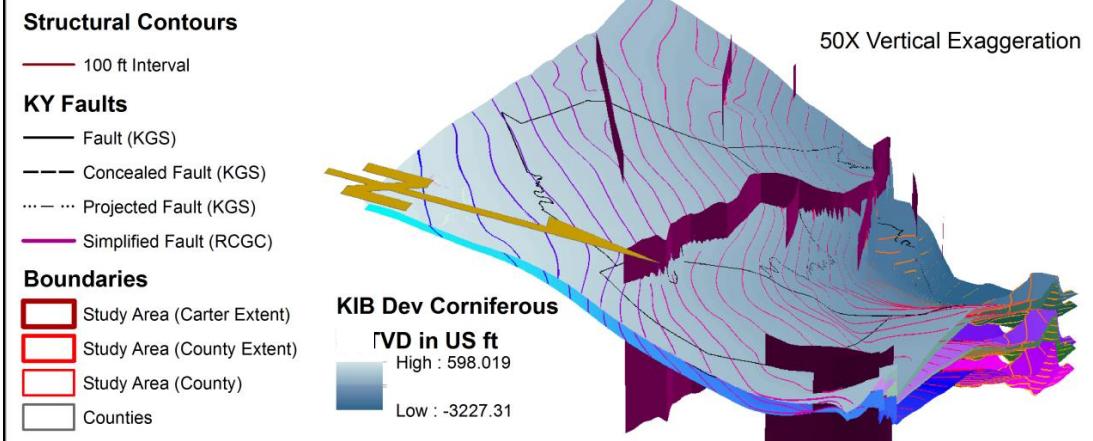
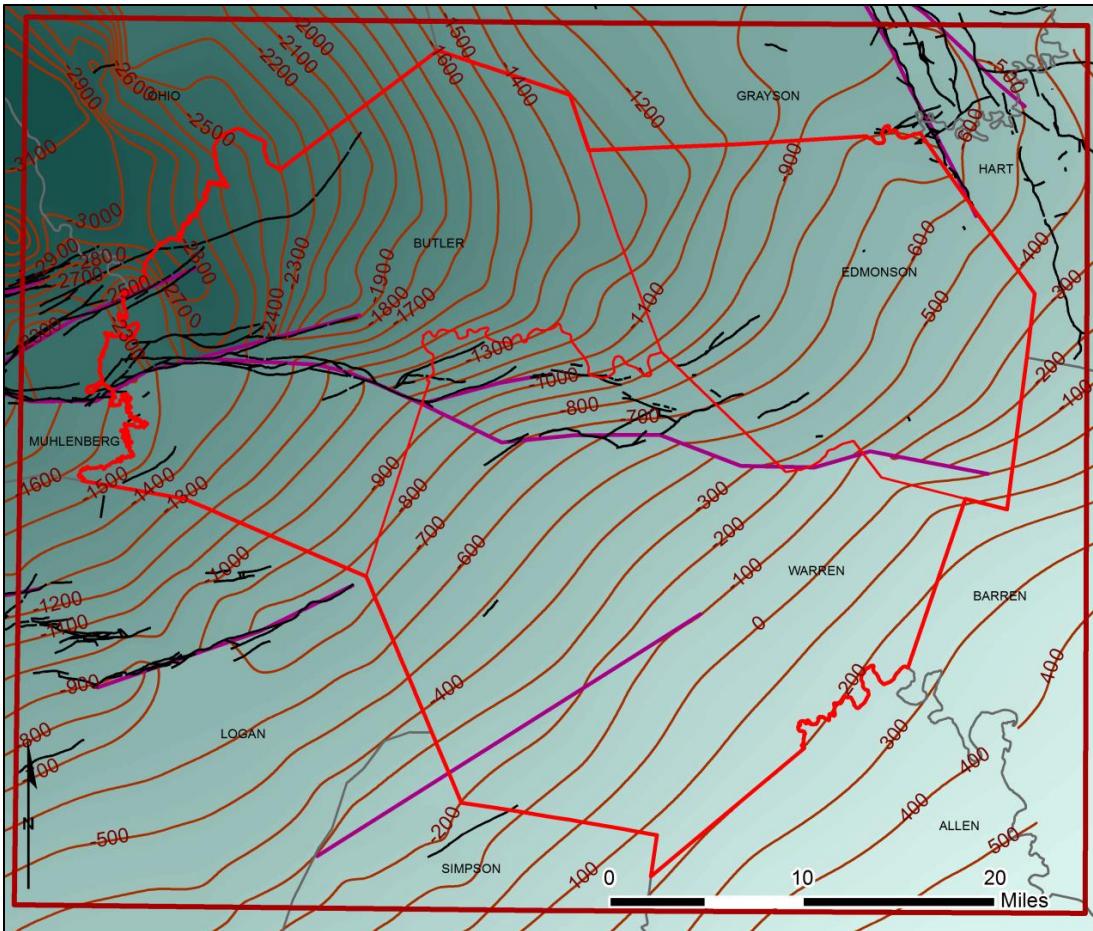


Figure 5.14. Structure Contour Map: Devonian Corniferous Top.

Inset map showing oblique view of study area in 3-D with 50X vertical exaggeration with north arrow to the right set level to vertical datum. The Sellersburg and Jeffersonville Limestone units and the Dutch Creek Sandstone comprise the Upper Devonian limestone. This unit sits directly underneath the New Albany Shale. Source: created by author, basemap data from KGS (2014).

#### *5.2.4: Devonian Clear Creek Structure*

Figure 5.15 illustrates the structural top of the Middle Devonian Clear Creek Limestone unit. Refer to table 5.1 for control point details. The Devonian Clear Creek Limestone structure possesses a configuration similar in shape to the New Albany Shale as shown in Figure 5.13 with localized exceptions in thickness and porosity. The Clear Creek structure slopes gently to the northwest at 50 feet per mile prior to crossing the Pennyrite fault system. Upon crossing the Pennyrite Fault Zone the structure slopes dramatically to the west ranging from 40 feet per mile in the eastern portion and 70 feet per mile in the western portion within the Rough Creek Graben. This unit is shallowest in the southeastern corner at around 550 feet above mean sea level and deepest in the northwestern corner at 3100 feet below mean sea level. The Pennyrite Fault Zone continues to act as a major structural hinge for the southern edge of the Rough Creek Graben. The Clear Creek Limestone unit is typically a highly porous limestone unit showing multiple zones of porosity exceeding 10%. Such porosity zones are typified by the basal Clear Creek and are continuous study area. The Moorman syncline is present but not as pronounced in the previous stratigraphic intervals discussed.



## Structure Contour: Clear Creek Top

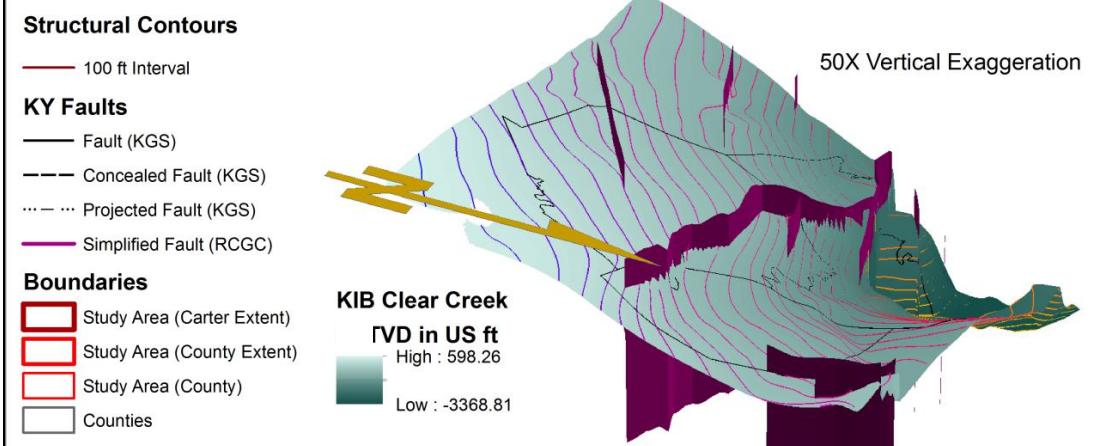


Figure 5.15. Structure Contour Map: Clear Creek Limestone Top.  
 Inset map showing oblique view of study area in 3-D with 50X vertical exaggeration with north arrow to the right set level to vertical datum. Lower Devonian Clear Creek limestone unit typically identified as a cherty limestone unit and locally the dominant hydrocarbon producing horizon. Source: created by author, basemap data from KGS (2014).

### *5.2.5: Devonian Ross/Grassy Knob Structure*

Figure 5.16 illustrates the structure of the Lower Devonian Corniferous, Ross/Grassy Knob Limestone units. Refer to table 5.1 for control point details. The structures of Ross/Grassy Knob Limestone units are similar to those previously described above. This limestone unit is argillaceous and discontinuous in places. The Ross/Grassy Knob slopes gently to the northwest at 50 feet per mile. Upon passing over the Pennyrite Fault into the Rough Creek Graben, the Ross/Grassy Knob Limestone dramatically slopes to the west at 50 feet per mile in the eastern portion and 80 feet per mile in the western portion. The shallowest portion of the Ross/Grassy Knob is in the southeast corner at about 550 feet above mean sea level and deepest in the northwest corner at 3600 feet below mean sea level. This unit typically marks the base of the Devonian Corniferous with all units below typically considered Silurian in age; however there is much debate on where the Silurian-Devonian boundary actually lies. Once again, the Pennyrite Fault acts as the major structural hinge for the southern edge of the Rough Creek Graben. The Moorman Syncline is much less pronounced in the Ross/Grassy Knob Limestone units than shallower units; however, the structure is still subtly present.

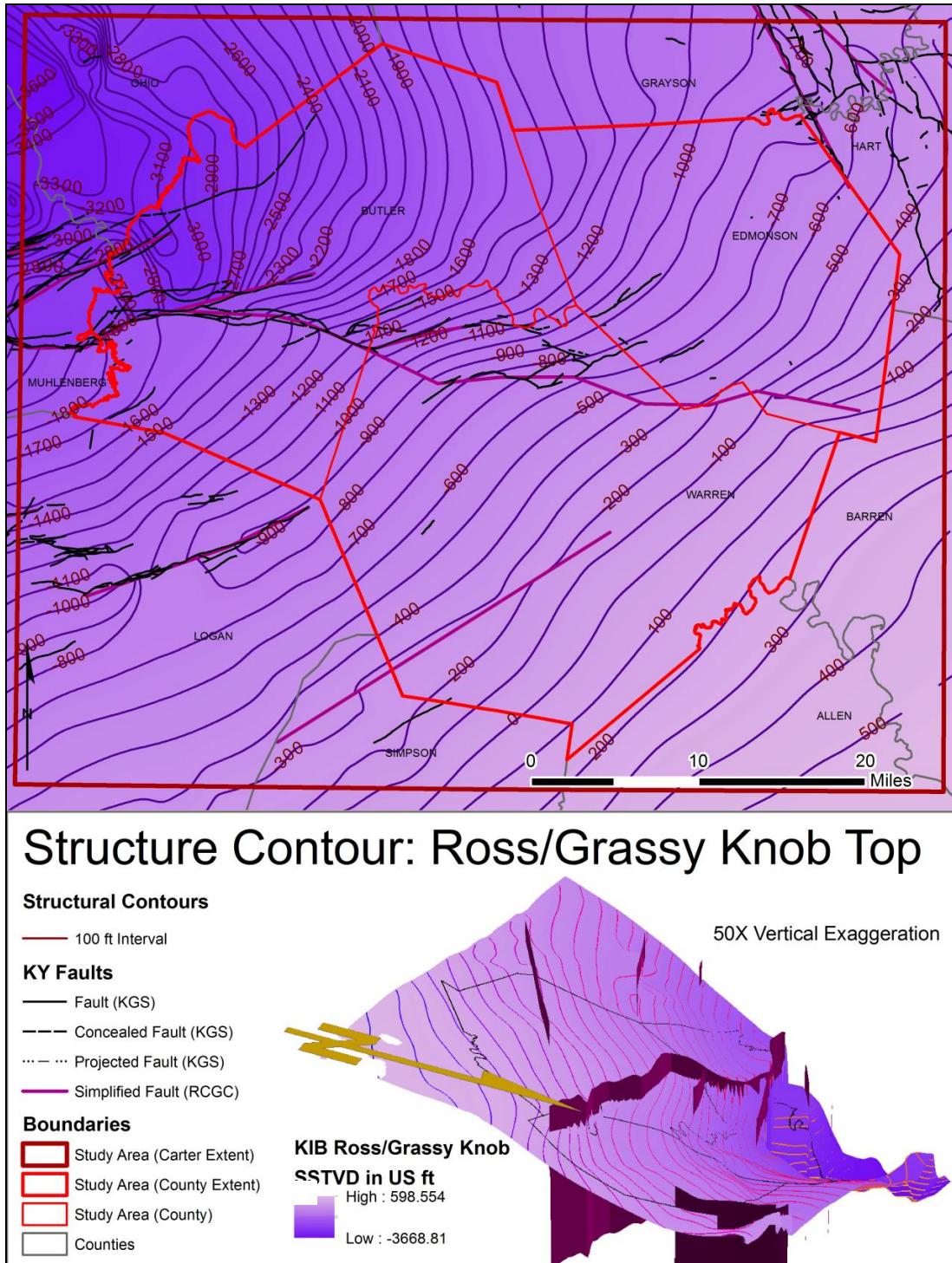


Figure 5.16. Structure Contour Map: Ross/Grassy Knob Top.

Inset map showing oblique view of study area in 3-D with 50X vertical exaggeration with north arrow to the right set level to horizontal datum. Basal Devonian limestone unit locally identified as the Ross Limestone but regionally identified as the Grassy Knob Limestone. Source: created by author, basemap data from KGS (2014).

### *5.2.6: Silurian Corniferous Structure*

Figure 5.17 illustrates the structure of the top of the Silurian Corniferous units; typically identified as either the Bailey Limestone to the western portion of the study area or Decatur Limestone to the eastern portion of the study area depending on location (Seale, 1985; Freeman 1951). Refer to table 5.1 for control point details. Silurian Corniferous stratigraphic units slope gently to the northwest at 50 feet per mile prior to crossing the Pennyrite Fault Zone into the Rough Creek Graben where they slope dramatically to the west ranging from 50 feet per mile in the eastern portion and 90 feet per mile in the western portion. The shallowest portion of the Silurian Corniferous is in the southeast at 500 feet above mean sea level and deepest at the northwest at 3700 feet below mean sea level. The Pennyrite Fault Zone acts as the structural hinge for the southern edge of the Rough Creek Graben. The Moorman syncline is even less pronounced in the top of the Silurian Corniferous than in the previous overlying units; however, the Moorman Syncline is still present in this structure.

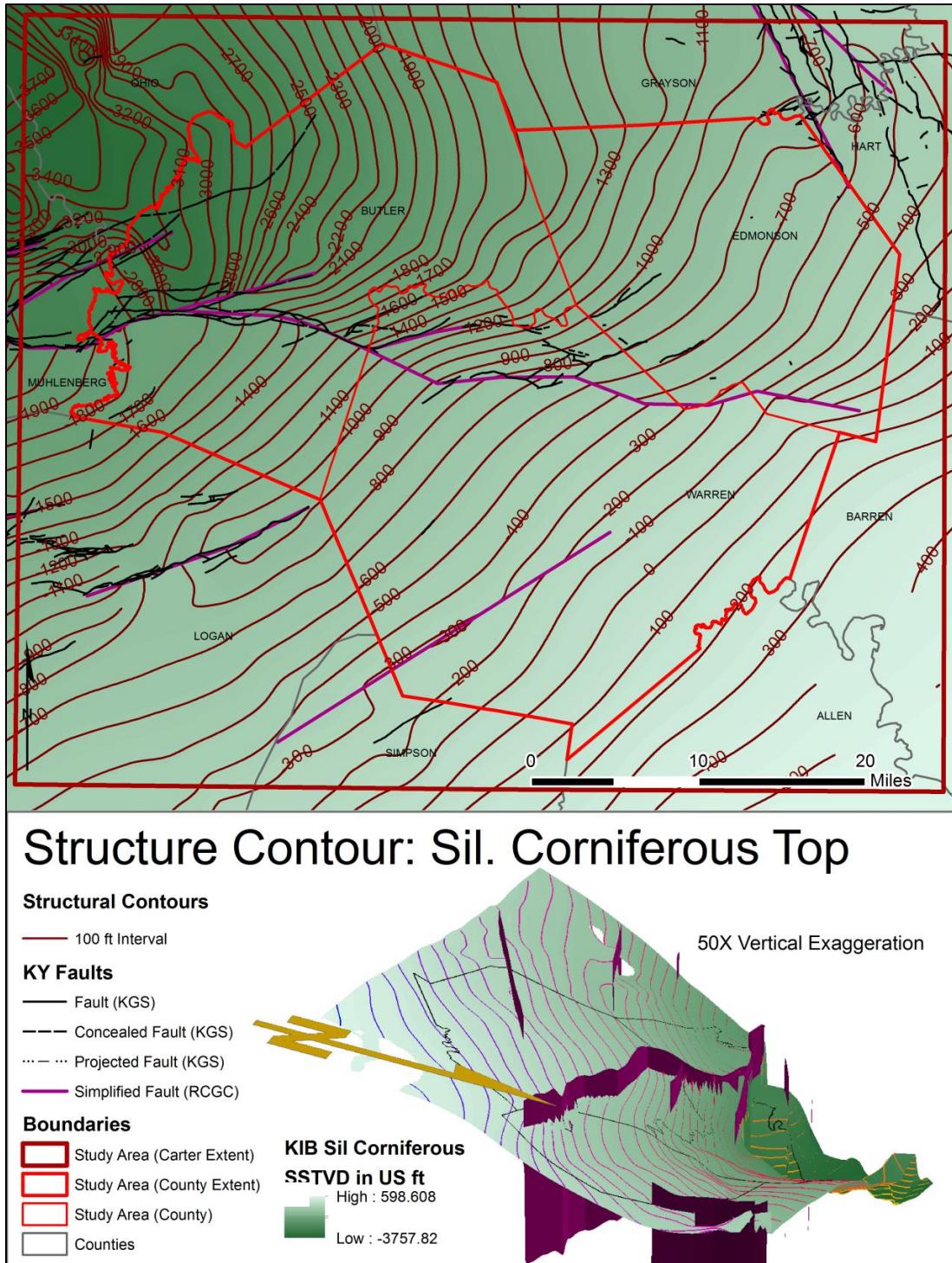


Figure 5.17. Structure Contour Map: Silurian Corniferous Top.  
Inset map showing oblique view of study area in 3-D with 50X vertical exaggeration with north arrow to the right set level to horizontal datum. Top of the upper most Silurian limestone units typically identified as the Bailey Limestone to the east and Decatur Limestone to the east depending upon geographic location. Source: created by author, basemap data from KGS (2014).

### *5.2.7: Silurian Waldron Shale Structure*

Figure 5.18 illustrates the structure of the Waldron Shale which has been chosen as the final structural unit for this study. This Shale unit is present across the entire study area, maintaining a fairly uniform thickness, and is easily identified in geophysical well logs which makes it an excellent marker bed. Refer to table 5.1 for control point details. Overall the structure mimics the entire structural configuration above it sloping gently to the northwest at 60 feet per mile prior to crossing the Pennyrite Fault Zone into the Rough Creek Graben where the slope changes dramatically to the west ranging from 60 feet per mile in the eastern portion to 90 feet per mile in the western portion of the mapping area. The deepest portion of the Waldron Shale is 4000 feet subsea elevation in the northwest corner and the shallowest at 450 feet above mean sea level in the southeast corner. The Pennyrite Fault Zone acts as the structural hinge for the southern edge of the Rough Creek Graben in this layer just as it does in the previous structural tops. The Moorman Syncline is only a minor feature in the Waldron Shale, barely identifiable by the minor divergence of contour lines.

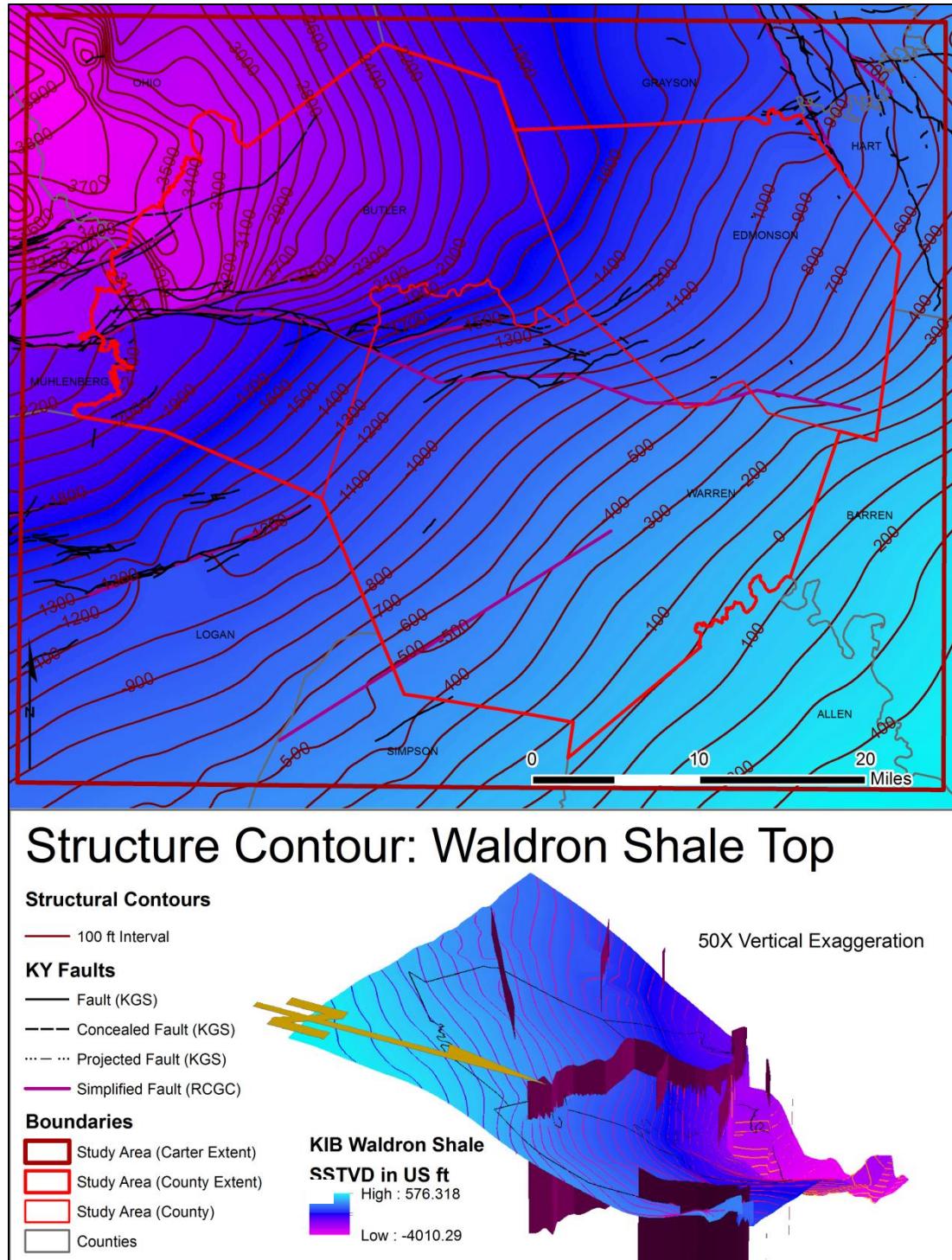


Figure 5.18. Structure Contour Map: Waldron Shale Top.

Inset map showing oblique view of study area in 3-D with 50X vertical exaggeration with north arrow to the right set level to horizontal datum. This surface represents the basal marker shale for the upper Silurian and lowest stratigraphic unit in this study. Source: created by author, basemap data from KGS (2014).

### **5.3: Hydrocarbon Show Mapping**

Hydrocarbon show and pay-zone data for this model are derived from the KGS oil and gas database. Each well with a reported hydrocarbon pay zone or hydrocarbon show was mapped based upon the recorded measured depth for each occurrence. The base of each show is then input into the 3-D model and extruded up through the thickness of each occurrence, resulting in a visual representation of the pay zone thickness at each location. In some cases, only a top or a bottom is recorded, and for these instances, a thickness of one foot is assigned and extruded up or down accordingly. Within the 3-D environment, hydrocarbon pay zone and hydrocarbon shows are categorized by reported pay system and color coded for mapping.

#### *5.3.1: Hydrocarbon Shows and Pay Zones*

Hydrocarbon shows and hydrocarbon pay zones are typically listed on the well affidavit, formation log, and/or sample log. Hydrocarbon shows are generally identified by the measured depth at which they occur, depth interval, thickness, and quality. Each hydrocarbon show is rated based upon its overall quality. This rating system is qualitative, generally starting with a faint odor and progressing up to an excellent show of oil and/or gas. This rating is typically assigned by the driller or the well-site geologist on site as the wellbore is drilled. Occasionally, the well-site geologist will have the proper equipment to perform field tests on cuttings retrieved from the wellbore as they are being described. In these cases, the hydrocarbon shows are logged and described based on hydrocarbon show quality, with more detail, often relating to fluorescence and/or oil water cut (qualitative amount of oil extracted from the cuttings when a solvent is applied). Wells with good-to-excellent shows are typically completed and labeled as

producing. In some cases hydrocarbon shows are not recorded at the time of drilling or logging, but the well is classified as producing. When this occurs, the hydrocarbon pay zone and/or perforated sections of the well casings are recorded and substituted for the hydrocarbon show interval and given a quality designation of good to excellent based upon the IP rate.

### *5.3.2: Hydrocarbon Pay-Zone Distribution*

Hydrocarbon pays, both oil and gas, are clearly broken into three distinct groups: Mississippian and Pennsylvanian (Miss-Penn), Silurian and Devonian (Silurian-Devonian), and Cambrian and Ordovician (Cambro-Ord), as shown on Figure 5.19. This study focuses on the Siluro-Devonian production, specifically the Devonian section of the Siluro-Devonian units (New Albany Shale, Sellersburg/Jeffersonville Limestone units, and the Clear Creek Limestone), but the Silurian and Mississippian sections are mentioned for context.

Figures 5.19 and 5.20 illustrate the hydrocarbon pay-zone distribution across the study area in clusters dominantly south of the Pennyrite Fault Zone, with minor clusters in the northern portion of the study area. Most occurrences of hydrocarbon are from multiple pay zones. Mississippian, Pennsylvanian, and mixed Miss-Penn pays typically occur in the western portion of the study area (western Butler, northern Logan, and eastern Muhlenberg counties); however, there are occurrences of Mississippian pay zones extending east past the center of the study area (north, east, and central Warren, Butler, northern Edmonson, southern Grayson, and southern Ohio Counties).

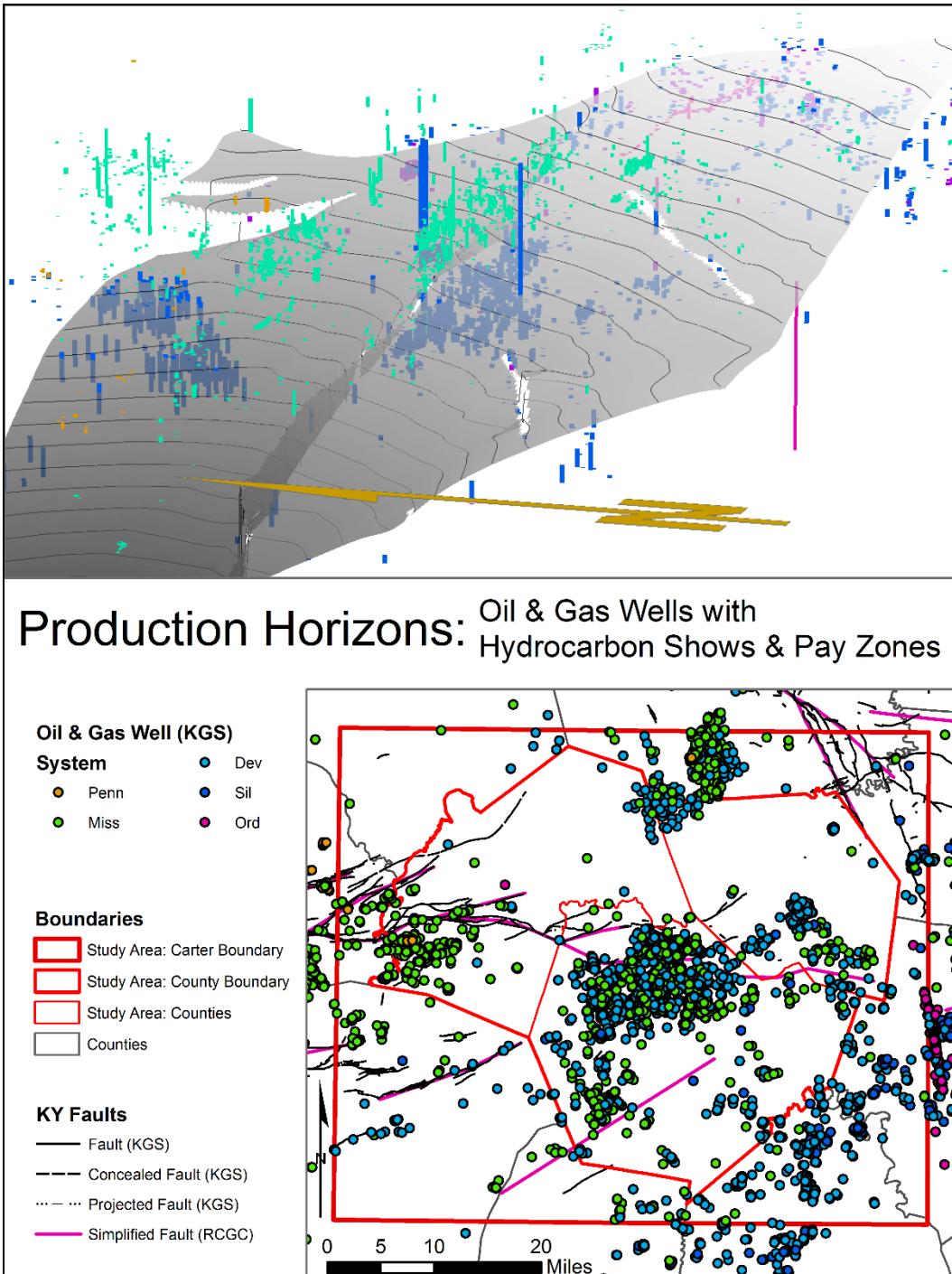


Figure 5.19. Hydrocarbon Production Horizons.

Upper 3-D model shows spatial distribution of oil and gas pay zones and hydrocarbon shows. North arrow is set level with vertical datum. Lower map highlights the distribution relative to the study area. Note that pay zones producing from just Mississippian are located to the west and that the remaining Mississippian production is associated with deeper Siluro-Devonian oil and gas pools. Source: created by author, basemap data from KGS (2014).

These occurrences of Miss-Penn hydrocarbon pay horizons are typically located in the units directly above the Siluro-Devonian hydrocarbon pay horizons. There are also occurrences of some Silurian and Ordovician pay horizons in the eastern most portion of the study area, where the Devonian units are at their thinnest or not present due to truncation against the base of the New Albany Shale.

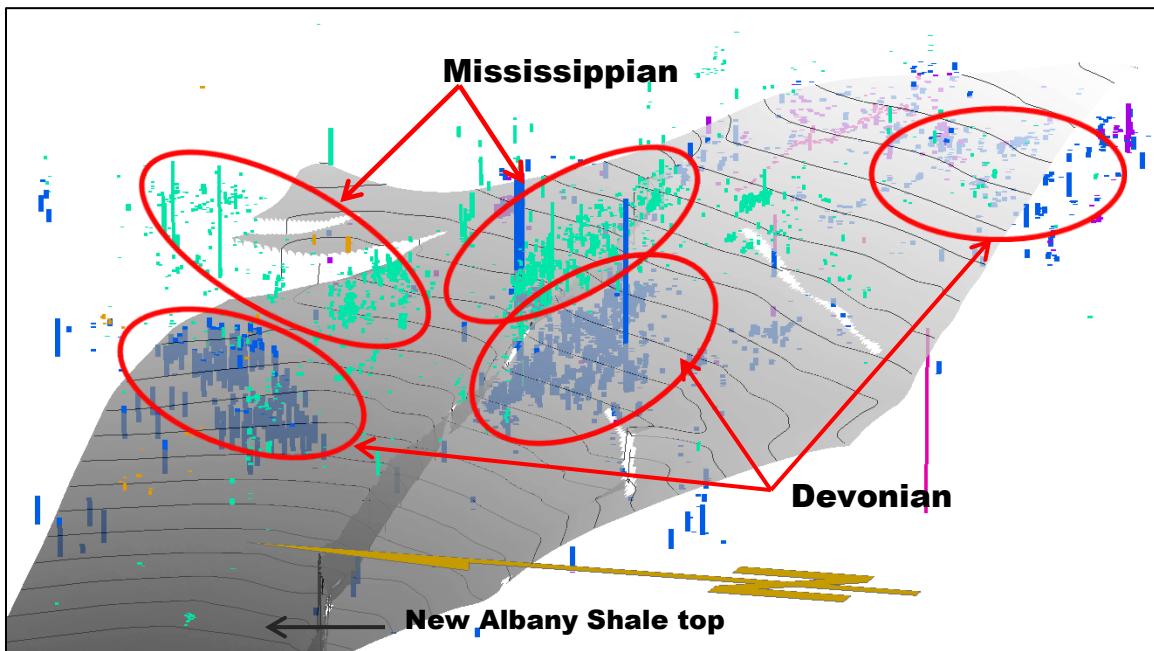


Figure 5.20. Pay Zone 3-D Model.

Pennsylvanian pay zones in gold, Mississippian pay zones in teal, Devonian pay zones in blue, Silurian pay zones in purple, and Ordovician pay zones in fuchsia. New Albany Shale structure in gray. Note the clear separation between the Miss-Penn and Siluro-Devonian pay zones. All long vertical lines indicate open-hole comingled wells. System truncation is also evident in the 3-D model. Source: created by author, basemap data from KGS (2014).

# **Chapter 6: Discussion**

## **6.1: Source, Path, Reservoir, and Seal**

According to Allen and Allen (2005) three components are required to make an effective oil and/or gas reservoir. These are the source material, the reservoir, and the seal. This section addresses the three components and the potential migration pathway for hydrocarbons in the Siluro-Devonian system, focusing on the connectivity of the potential hydrocarbon source unit and the reservoir units. This section also highlights the complexities of the Devonian hydrocarbon system in the study area.

### *6.1.1: Self-sourcing System*

The portion of the hydrocarbon system located within the Rough Creek Graben associated with the Shrewsbury and Nash fields of southern Grayson County, northeastern eastern Butler County, and northwestern Edmonson County is typically referred to as a self-sourcing shale gas play, as shown in Figure 6.1. The hydrocarbons in this system are sourced from the New Albany Shale. The hydrocarbon, in the form of natural gas, migrates up dip from the deeper sections where great heat and pressure create a more thermally mature environment for the production of natural gas. This natural gas is then trapped in the localized structural highs adjacent to the Moorman Syncline. In this instance, the New Albany Shale in combination with the New Providence Shale also functions as the seal preventing the upward migration of the dry gas into Mississippian units. In sections where the New Providence Shale is thin or absent, the gas is allowed to migrate upward into the Mississippian limestone units, accounting for the sections of Mississippian gas production in the region. This can be seen in Figure 6.1, where there are bright blue hydrocarbon shows present above the gray-blue hydrocarbon shows.

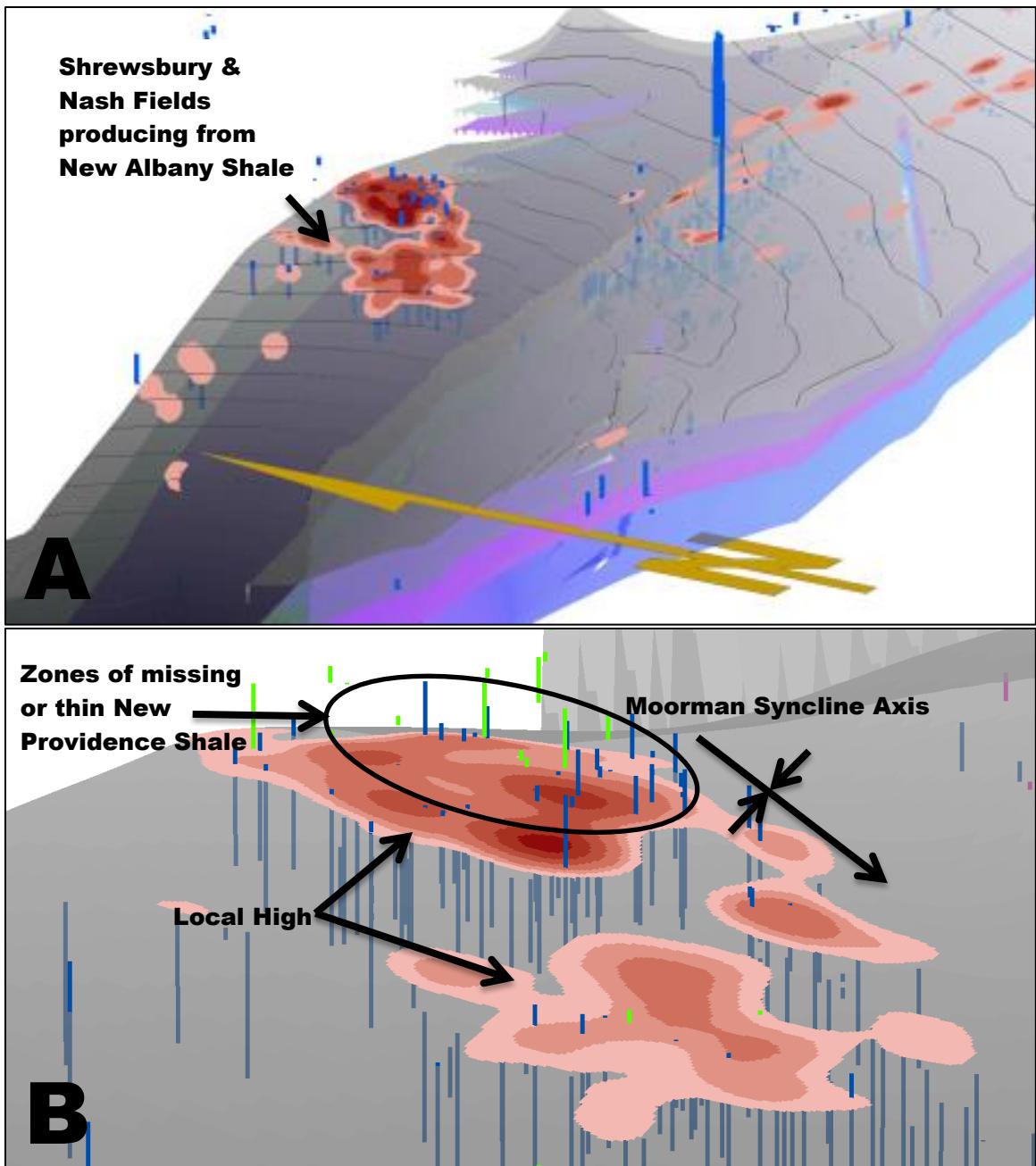


Figure 6.1. Self-Sourcing New Albany Shale Gas Trap.

A. upper image shows the distribution of Shrewsbury and Nash gas fields.

B. lower image identifies the axis of the Moorman Syncline, the localized highs, and the areas with thin or missing New Providence Shale. This missing New Providence Shale allows for the upward migration of gas into Mississippian limestones. Note that this trap associated with the Moorman Syncline and that the New Albany Shale is source, reservoir, and trap. The subtle structure of the syncline allows for gas to pool at this location. Source: created by author, basemap data from KGS (2014).

### *6.1.2: Fault Systems Connect Charged and Conduit Beds*

The majority of the Siluro-Devonian production in this system associated with the Arthur, Anna, Nick, Richardsville, and Bowling Green Consolidated fields is related to the combination of structure and stratigraphy, as shown in Figure 6.2. Faulting associated with the Rough Creek Graben, specifically the Pennyrile Fault Zone oriented east-west through southern Barren County, northern Warren County, and southern Edmonson County, has placed a stratigraphically younger source unit structurally lower relative to the stratigraphically older but structurally higher reservoir units. The faulting, in this case, provides the potential for direct connectivity between the source and reservoir units. On the northern side of the Pennyrile Fault Zone, the source rock (the New Albany Shale) is either structurally deep enough or has been exposed to hydrothermal fluids producing conditions capable of generating thermally mature hydrocarbon in the organic rich New Albany Shale (Mastalerz et al., 2013; Mariño et al., 2015). On the southern side of the Pennyrile Fault Zone, the reservoir rock (Devonian Corniferous) is juxtaposed directly adjacent to the source rock. Hydrocarbon, in the form of oil and gas, migrates up dip along the southern portion of the Rough Creek Graben, crossing the Pennyrile Fault Zone, to become trapped in the highly porous strata of the Clear Creek Limestone and Sellersburg/Jeffersonville Limestone units. In this case, the New Albany Shale on the southern side of the Pennyrile Fault Zone acts as the seal for the Corniferous reservoir, where the shale is the source on the northern side of the Pennyrile Fault Zone.

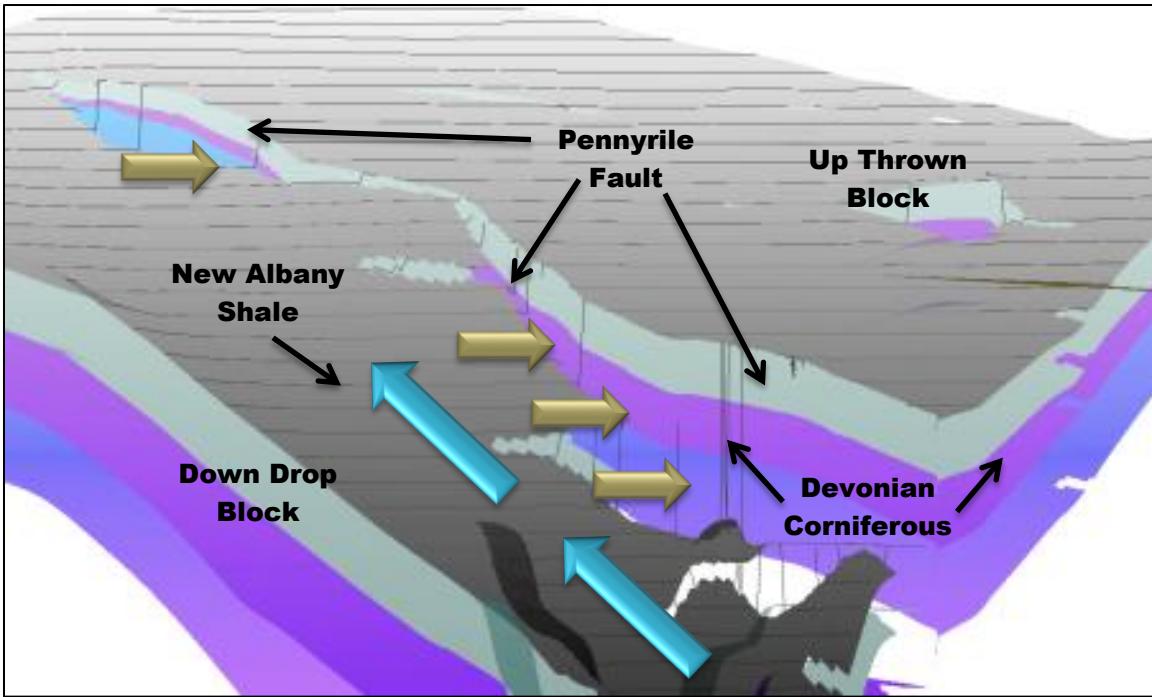


Figure 6.2. Fault Displacement Charging.

Brown arrows indicate migration and blue arrow indicates up dip direction

Note that the stratigraphically younger but structurally lower source unit (New Albany Shale) is directly adjacent to and down dip from the stratigraphically older but structurally higher conduit and reservoir units (Devonian Corniferous). Source: created by author, basemap data from KGS (2014).

#### *6.1.3: Southern Pennyrite Shelf and Potential Reef Structure*

The prolific hydrocarbon production associated with the fields south of the Pennyrite Fault Zone in Warren County and southwestern Edmonson County is coincident with a Silurian age reef trend documented to the north, a potential extension of the Terre Haute Reef system in southern Indiana, as shown in Figure 6.3 and Figure 6.4, originally proposed by Coburn (1986) and then again by Whitaker (1988). Seale (1985) argued that the Silurian-age rocks found in core and well cuttings from this area showed characteristics of reef deposits. Figure 6.5 illustrates the lithofacies characterized by Seale (1985). These rock characteristics alone do not indicate the presence of Silurian-

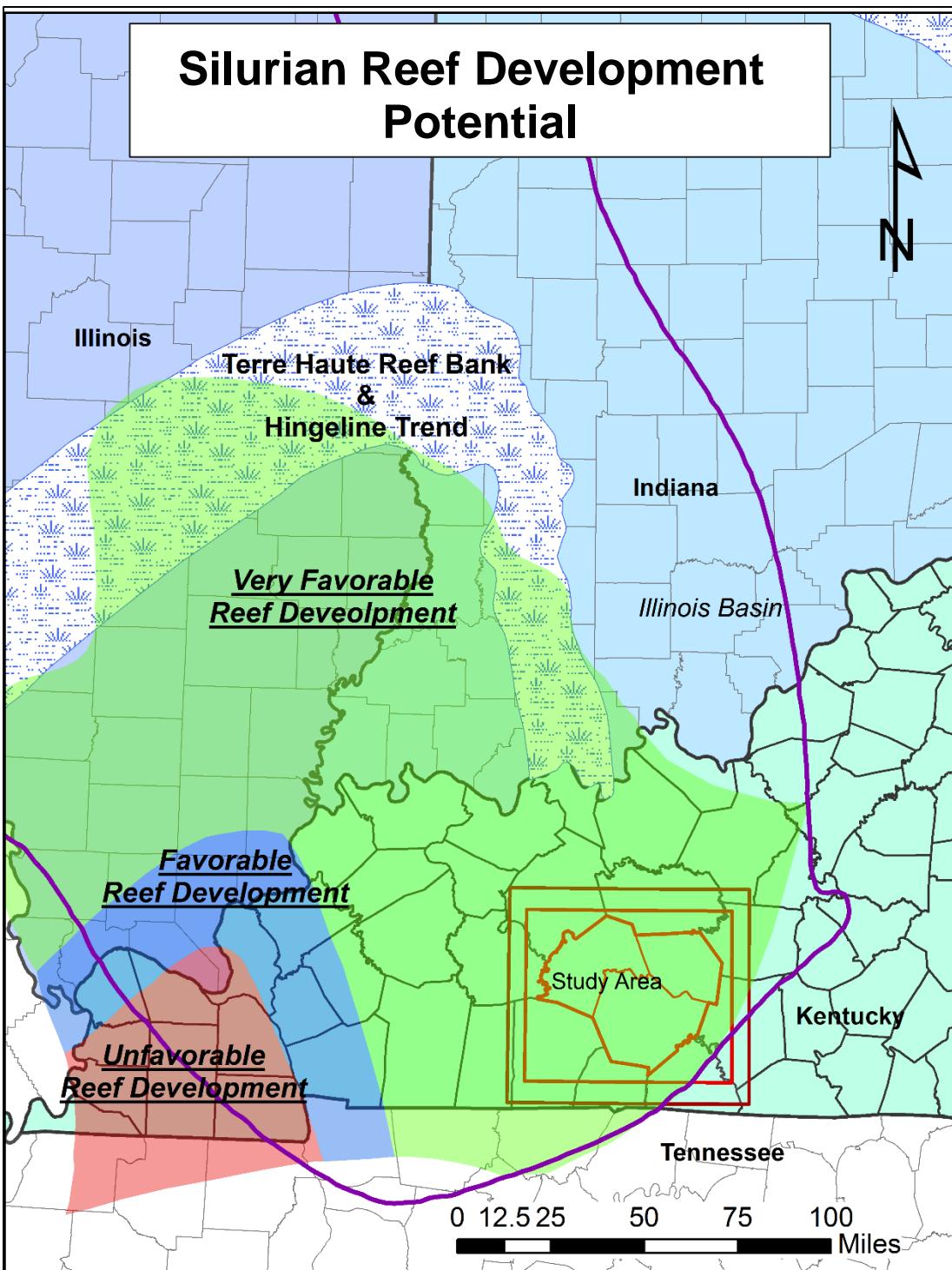


Figure 6.3. Silurian Reef Development Potential Map.

Red indicates unfavorable conditions, Blue indicates favorable conditions, and green indicates very favorable conditions. Note that the areas indicated as very favorable for reef development cover most of the existing Terre Haute Reef System and extend down into the study area in south central Kentucky. Source: modified from Coburn (1986) and Whitaker (1988).

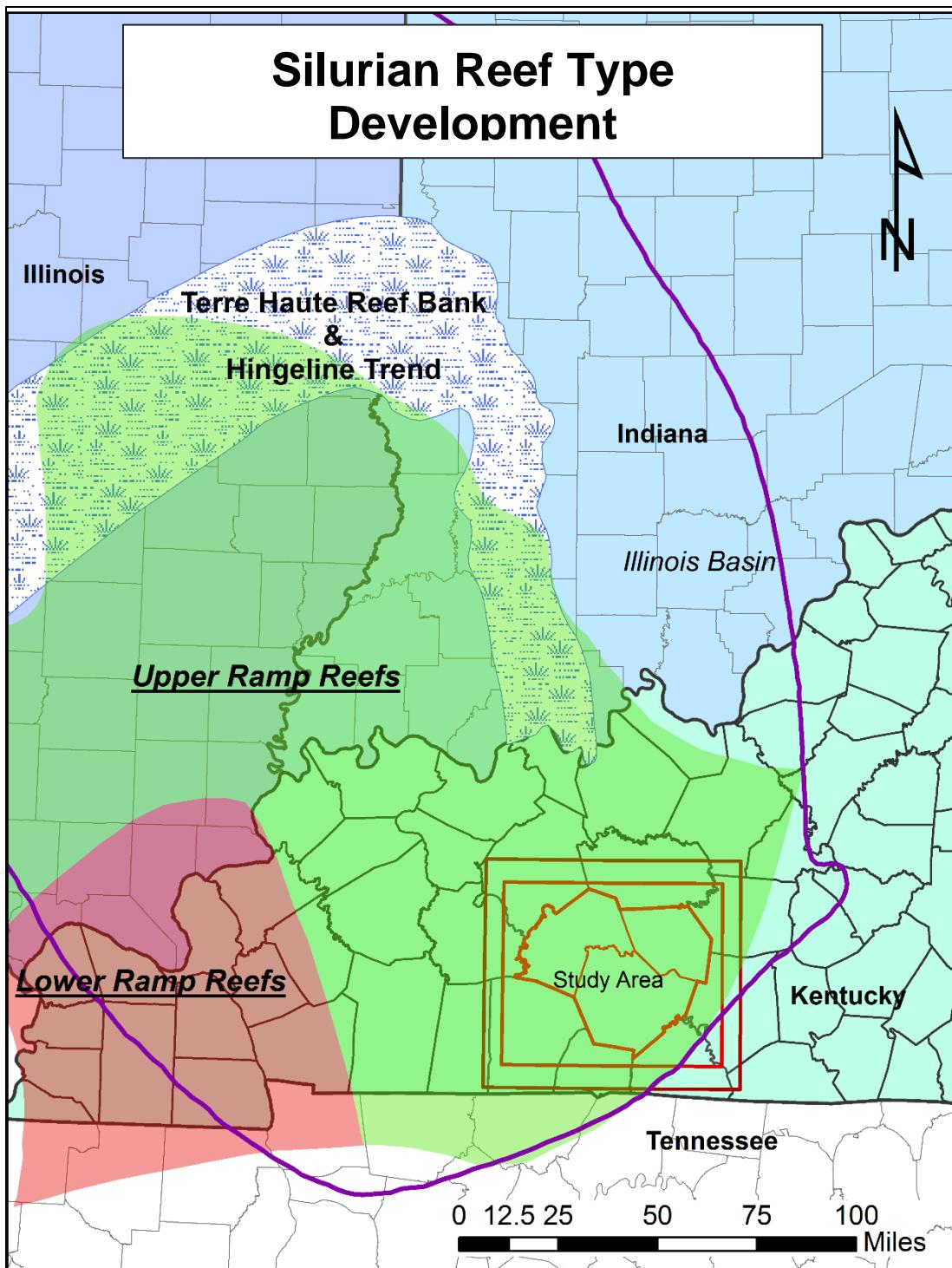


Figure 6.4. Silurian Reef Type Development Map.

Green indicates potential for upper ramp reef development and red indicates potential for lower ramp development. Note that the majority of the Terre Haute Reef System falls in the Upper Ramp Reef Type. This is also coincident with the study area. Source: modified from Coburn (1986) and Whitaker (1988).

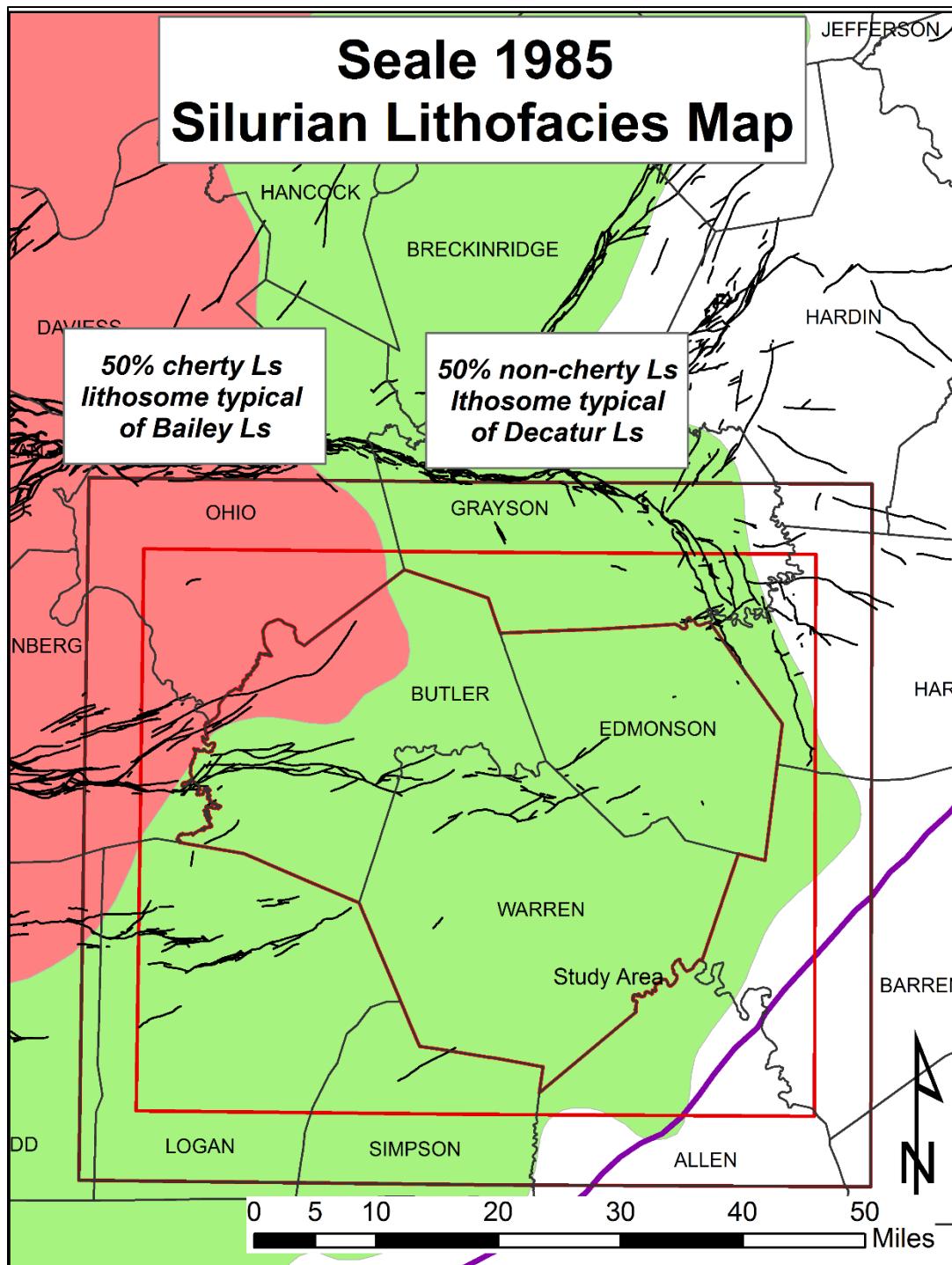


Figure 6.5. Seale's (1985) Lithofacies Map.

Green region indicates the zone of non-cherty lithosomes indicative of shallower water deposition. Red region indicates the zone of cherty lithosomes indicative of deeper water deposition. Lithofacies can be tied to reef facies but no direct evidence has surfaced to confirm the presence of Silurian age reef systems crossing central Kentucky. Source: modified from Seale (1985).

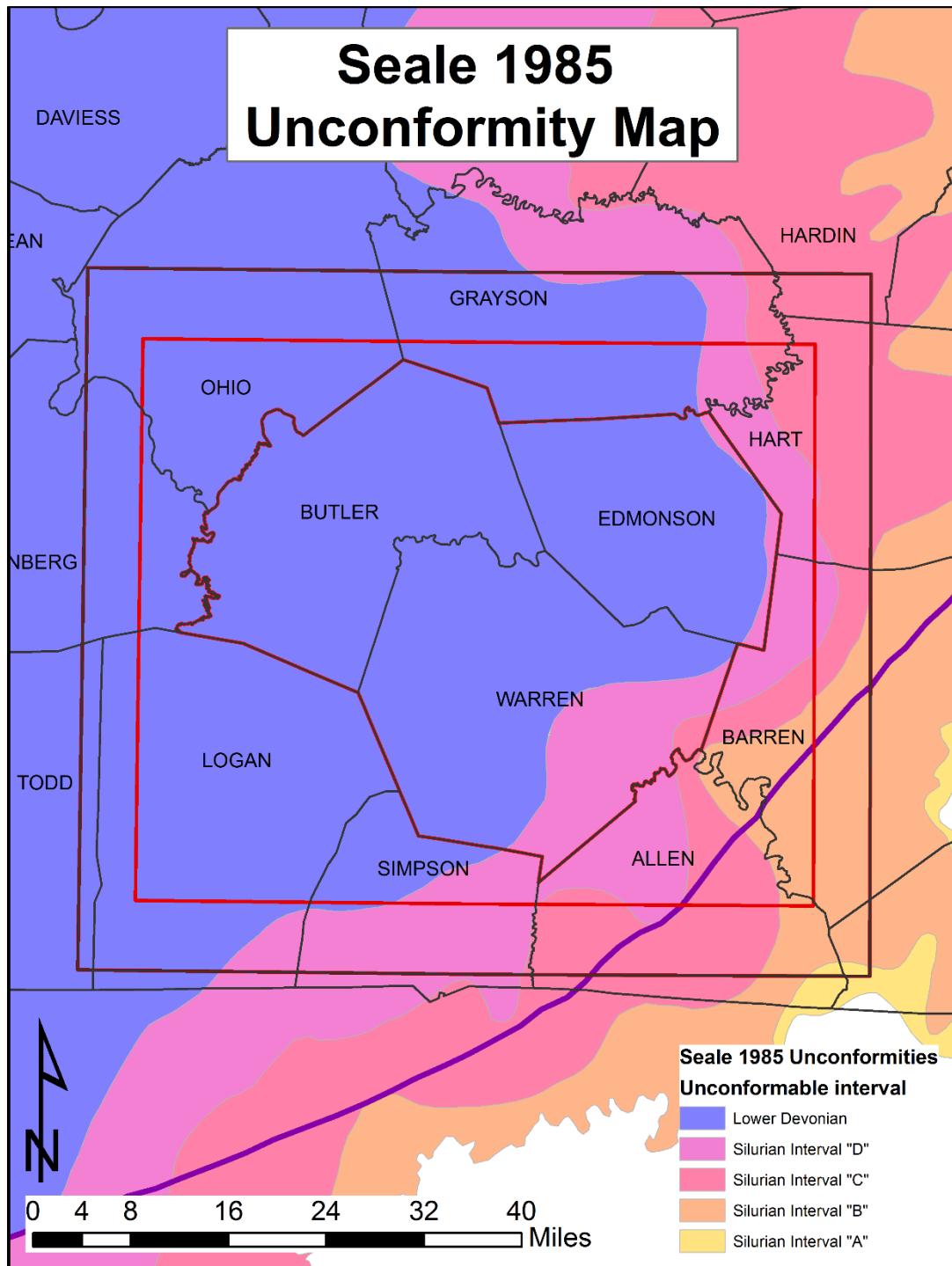


Figure 6.6. Seale's (1985) Unconformity Map.

The blue region indicates the extent of the basal Devonian unconformity. The other four unconformities represent Silurian age unconformities. Note that the overall shape is reminiscent of the Illinois Basin margin and the section containing the Rough Creek Graben. Placing a potential debris/talus pile and shoal system in the region of the Pennyville Shelf. Source: modified from Seale (1985).

age reef structures but, in conjunction with other evidence, give credence to the existence of an extension of the Silurian reef trend observed in Indiana. The pervasive porosity breaks in the lower Clear Creek Limestone unit, with thicknesses ranging from 5 feet to 20 feet, are positioned within 20 feet of the base of the Clear Creek Limestone. These breaks are indicative of talus and/or debris piles associated with a shoaling environment potentially developed in conjunction with the Lower Devonian unconformity. The extent of this Lower Devonian and the Silurian unconformities shown in Figure 6.6 indicate the extent of potential reef erosion and break down prior to the buildup of Devonian age rocks (Seale, 1985). The multiple mounded structures present in the central region of Warren County, known as the southern Pennyrike Shelf are reminiscent of drowned Upper Silurian reefs exposed and reworked during the early Devonian, that formed large skeletal debris piles and shoals commonly found in the southern portion of Indiana and in southern Illinois, as discussed by Becker and Keller (1976). Figure 6.6 illustrates the distribution of mounded and patchy production typically associated with reef and shoal style reservoirs. These shoal and debris pile environments typically produce grainstone to rudstone facies that form highly porous units. Jobe and Saller (1995) recognized that talus and debris piles adjacent to reef cores can act as highly porous and permeable carbonate prospects. These units typically form large networks in the younger overlying rocks around and adjacent to the original reef core also described by Lucia (1999), Becker and Keller (1976), and Bristol (1974). The original porosity of such rocks is generally highly porous and commonly porosity is enhanced by partial dolomitization or partial dissolution during the influx of mixed brines and freshwater (Lucia, 1999). The potential southerly extension of a Silurian age reef system beneath the Devonian

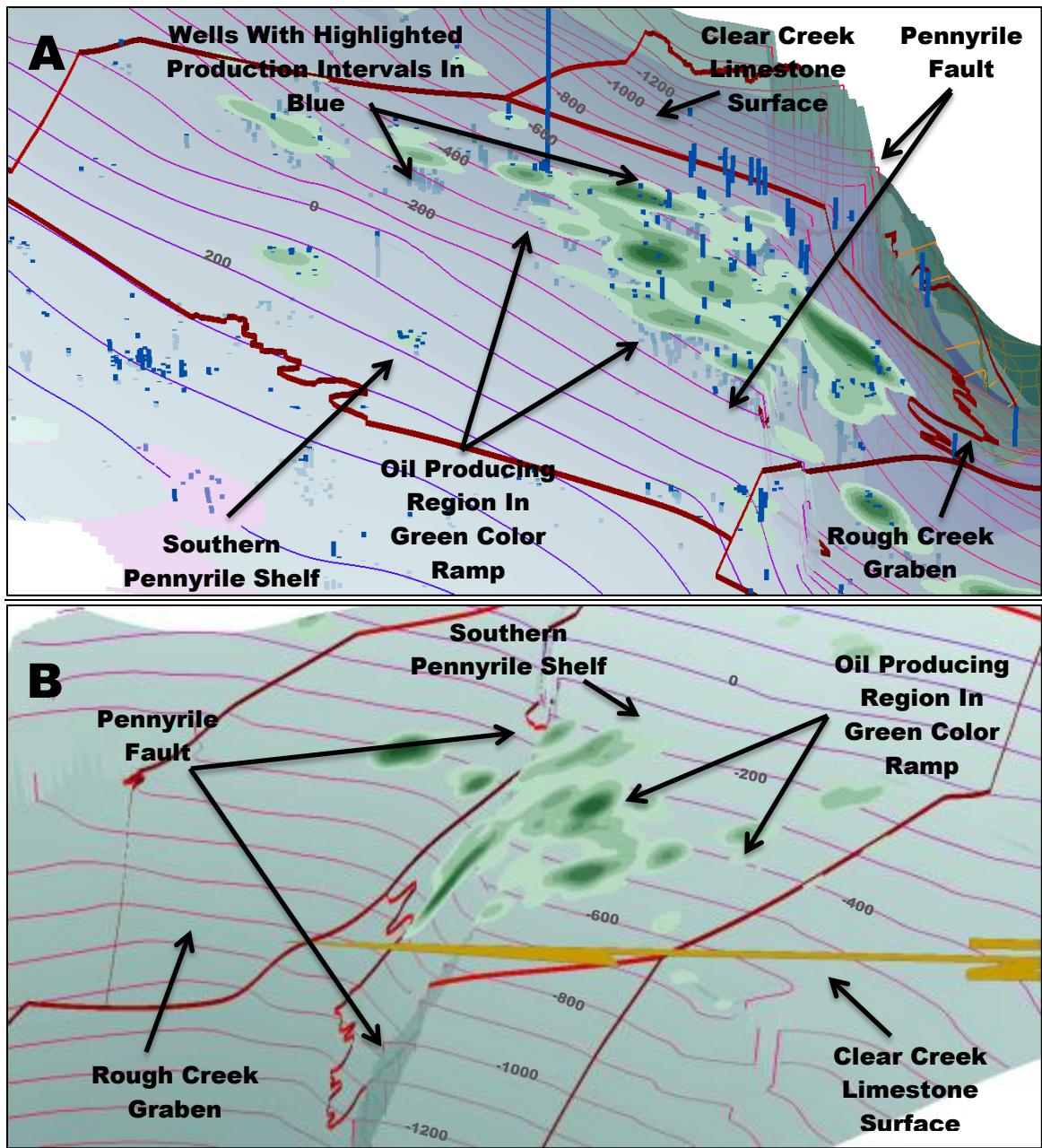


Figure 6.7. Southern Pennyrile Shelf.

A. upper view of the top of the Clear Creek Limestone facing west with view down the Rough Creek Graben.

B. lower view of the top of the Clear Creek Limestone facing east with view up the Rough Creek Graben.

Oil well production zones in blue and Devonian oil producing regions in green color ramp, darker greens indicate larger concentration of producing wells. Note that production occurs in small isolated patches with concentrations around a central core. Production is dominantly on the southern side of the Pennyrile Fault. Source: created by author, basemap data modified from KGS (2014).

Corniferous in south central Kentucky will need further examination through examination of strategically placed wells and cores targeting the entire Siluro-Devonian section of the Southern Pennyrule Shelf.

- *6.1.4: Truncation and Pinch-outs Against the New Albany Shale*

The entire Siluro-Devonian Corniferous system demonstrates a thinning and truncation of sedimentary units from west to east against the base of the New Albany Shale. Such stratigraphic truncation is enhanced by both the general location along the flank of the Illinois Basin margin and the relative proximity to the Cincinnati Arch and the Rough Creek Graben, as illustrated in Figure 6.8. This truncation is described by Freeman (1951) as a feature resulting from the emergent Cincinnati Arch. This emergent feature to the east, in addition to the continued development of the Rough Creek Graben in conjunction with the developing Illinois Basin, provides tremendous accommodation space found to the northwest of the study area in the basin. The truncated system is punctuated by a series of unconformable surfaces packaging the Silurian-Devonian Corniferous units into discrete mappable units (Freeman, 1951; Seale, 1985). Freeman (1951) also attributed the formation of the Cincinnati Arch as a contributor to the redistribution of Ozark and Appalachian sediments. Sediment dispersal systems (rivers) provided the major source of unconformable surfaces during the Silurian and Devonian. These thinning and truncated porous limestone and dolomitic limestone units act as the migration pathway and reservoir allowing the oil to collect in an arcuate area along the southeast flank of the Illinois Basin, as shown in Figure 6.8. When examining the areas north of the study area, the same thinning and truncation of the Silurian-Devonian units was observed, but the truncation found in the southeastern section is offset further to the

east by the accommodation provided by the eastern edge of the Rough Creek Graben.

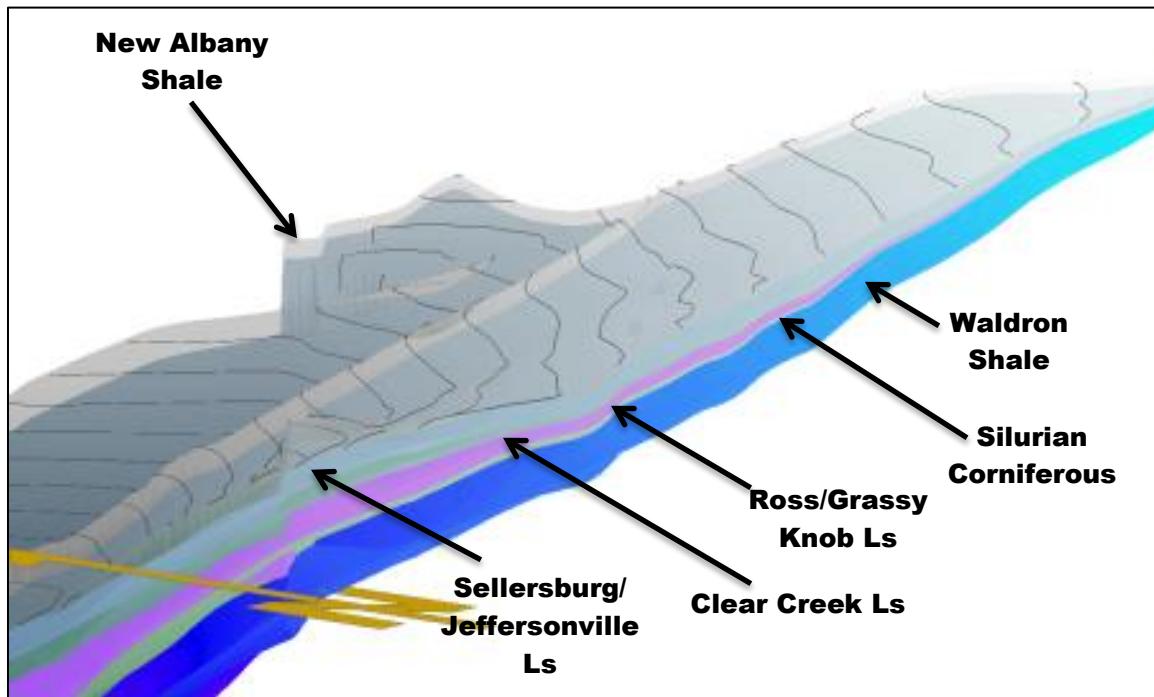


Figure 6.8. Modeled Thinning and Truncation.

Edge view looking east/northeast. New Albany Shale in gray, Sellersburg/Jeffersonville Ls in light blue, Clear creek Ls in green, Ross/Grassy Knob Ls in pink, Silurian Corniferous in pale green, and Waldron Shale in dark blue. North arrow is pointing to the left and is set level to the vertical datum. Note that the Devonian Corniferous layers thin finally truncate against the base of the New Albany Shale. The base layer in this model represents the Waldron Shale and in the southeast most corner it is positioned directly underneath the New Albany Shale completely cutting out both the Devonian and Silurian Corniferous sections. Source: created by author, basemap data modified from KGS (2014).

As hydrocarbon is expelled downward from the New Albany Shale, along the path of least resistance, into highly porous and permeable Devonian rocks or migrating up through the underlying Silurian-Devonian carbonates, the general stratigraphy and structure of the New Albany Shale creates a seal and conduit system. The upper portion of the New Albany Shale tends to be a more indurated and less permeable than the lower sections. This change in shale stratigraphy prevents oil from migrating up through the shale completely and allows for the lateral migration through the more permeable lower

limy sections of the New Albany Shale and underlying Sellersburg, Jeffersonville, and Clear Creek Limestone units. These underlying limy shale and carbonate units account for most of the oil production directly beneath the New Albany Shale and along the truncated Illinois Basin flanks.

## **6.2: Drilling and Production Trends**

Drilling and production trends in Kentucky must be addressed with consideration of the limitations associated with oil and gas field collection, taxation and production reporting, well-completion processes, formation health, and original inception dates. All of these factors play into the final reported production and taxation for Kentucky oil and gas fields. Nuttall (2014) outlines major discrepancies in reported versus taxable hydrocarbon on a statewide basis. The discrepancies range from as little as 28% from oil to as high as 64% from gas values reported in 1992 (Nuttall, 2014). Part of the reason for the major discrepancies can be related to the hydrocarbon collection and reporting methods. Oil is reported on a lease level without consideration of the number of wells or volumes contributed by each well and gas is reported on a well by well basis, making comparison difficult if not impossible in some locations. More issues develop when operators are either unaware of or falsely report the producing volumes and the rates of production for individual wells, only reporting the final volume held in tank batteries at the time of sale.

IP values are also problematic. IP is the amount of oil and/or gas produced when the well comes on line immediately after completion. Completion methods vary from well to well and each well should be treated as a unique situation. A given drill commonly will encounter multiple-pay zones along the depth of the well bore. If the

individual targeted production horizons are not known, the well might be improperly completed or completed open-hole. Such open-hole practice unfortunately results in the comingling all oil and/or gas without differentiation of production horizon, pool, or field. Treatments, stimulation, and hydraulic fracturing can further damage the well and its productive horizons, thereby reducing reservoir pressures and drive, making IP values for wells drilled within reasonable proximity sporadic and suspect at best.

For these reasons, this project does not address any of the reported production values from the KOGC, the KGS, or any of the KGS-reported IP rates. The IP rates are provided in Appendix B to provide the reader an appreciation of the great variability reported by operators to KGS.

#### *6.2.1: Devonian Production vs. Oil and Gas Fields*

Without considering the volumes of oil and/or gas produced from any of the individual wells, the total oil and gas drilling activity continues to expand in south central Kentucky. When the KDE models for surface-drilling activity producing oil (shown in greens in Figure 6.9) and surface-drilling activity producing gas (shown in reds in Figure 6.9) are overlain and compared to the reported oil and gas fields map published by the KGS, modified from Schwalb et al. (1972), it is clear that drilling activity has expanded in comparison to the original reported oil and gas fields map published by the KGS. Based on Figure 6.9, it is difficult to identify which horizons are being targeted. The only thing that can be discerned is that oil tends to be produced from the southern half of the study area and that gas is typically produced from the northern half of the study area.

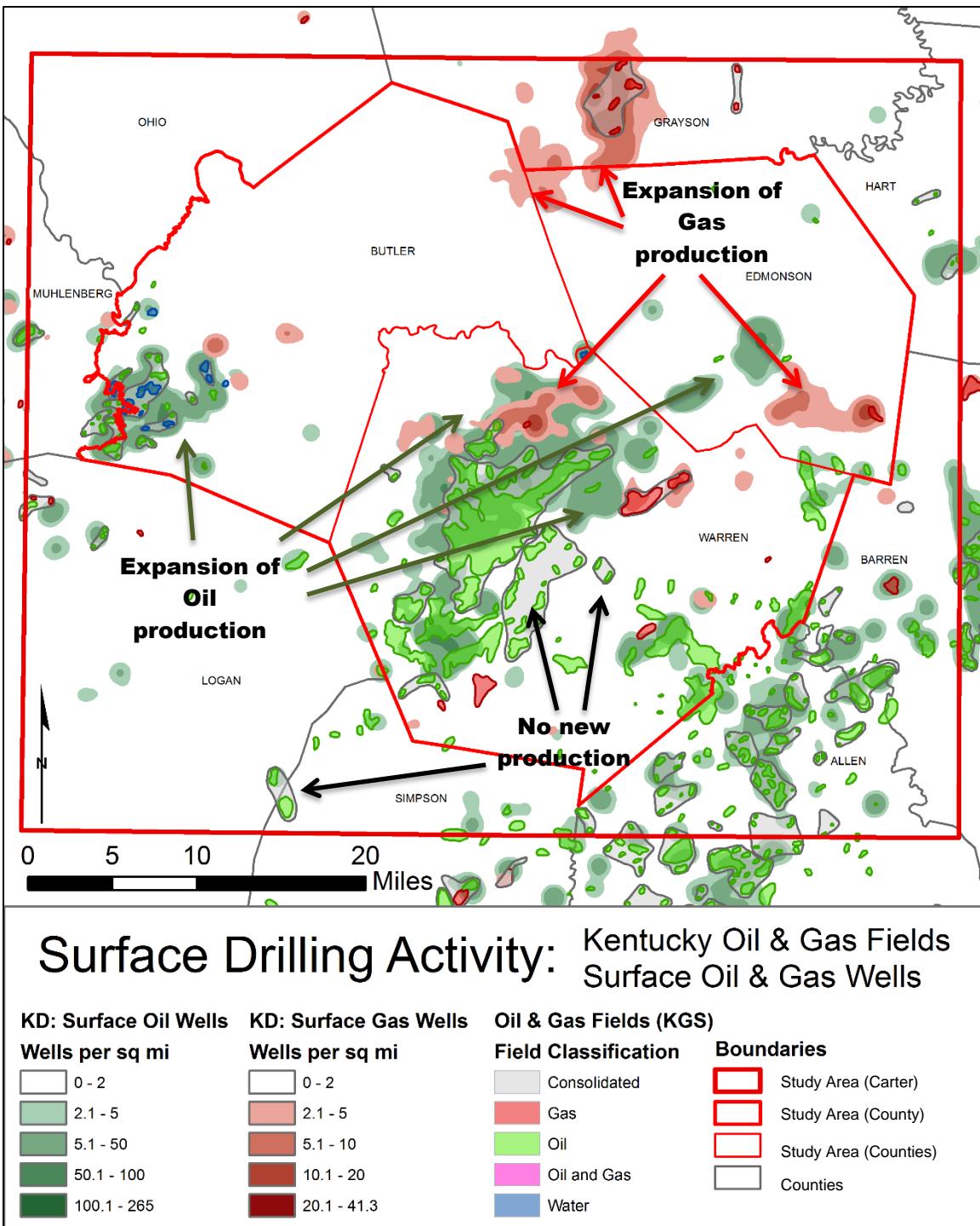


Figure 6.9. South-Central Kentucky Drilling Activity and KY Oil and Gas Fields. kernel density estimation map showing the distribution of oil and gas wells within the study area compared to the KGS known oil and gas fields. Note the correlation of the kernel density estimation maps with the older fields of the KGS known oil and gas fields. Also note that the fields developed after 1980 do not have documented boundaries. Source: created by author, basemap data from KGS (2014).

There is also a mix of both oil and gas trending along the middle of the study area in conjunction with the Pennyrile Fault Zone.

#### *6.2.2: Devonian Production Explained*

When the KDE model of all of the wells, that are either classified as targeting and/or producing from the Devonian, is plotted against the KDE model for all producing oil and gas wells, a clear pattern emerges, as seen in Figure 6.10. The majority of all oil and gas production for the southeastern half of the study area is derived from Devonian oil, with minor amounts of Devonian gas in northern Warren County. The majority of gas being produced in southern Grayson, western Edmonson, and eastern Butler counties is also derived from a Devonian source. Several factors contribute to this trend. First and foremost, the prolific Devonian production in southern Edmonson and Warren counties is attributed to the previously described juxtaposition of hydrocarbon charged, stratigraphically younger, but structurally lower source beds against stratigraphically older but structurally higher reservoir beds. The Pennyrile Fault Zone provides the necessary connecting conduit system connecting the two juxtaposed source and reservoir units. Second, the ring of Devonian production in Barren and Allen counties is attributed to the stratigraphically thinning and truncation of porous and permeable Devonian units against the base of the non-permeable New Albany Shale. Thirdly, the gas production in southern Grayson, western Edmonson, and eastern Butler counties is directly related to the Moorman Syncline in the middle of the Rough Creek Graben, forming a self-sourcing self-sealing stratigraphic trap.

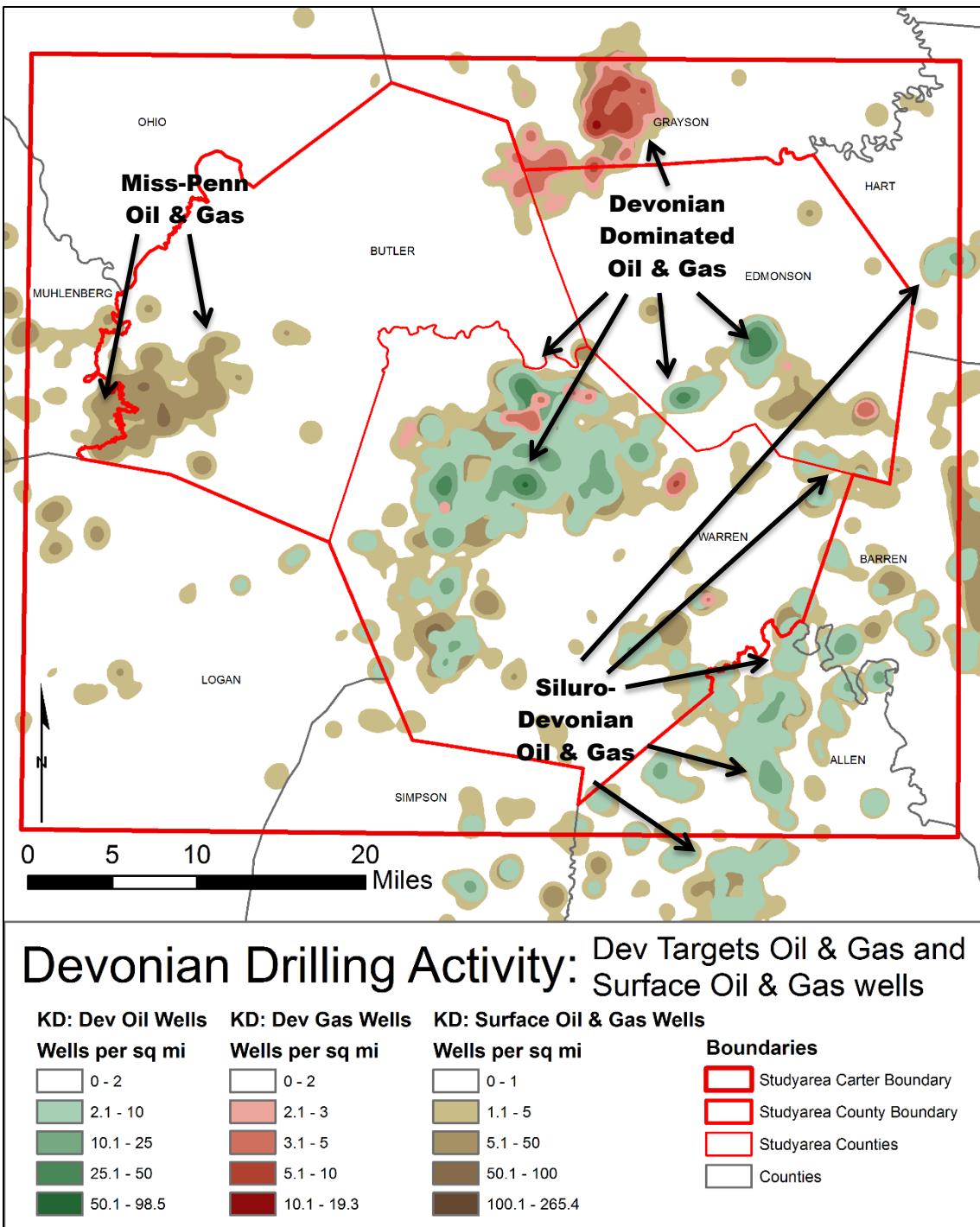


Figure 6.10. South-Central Kentucky Drilling and Devonian Drilling Activity. Kernel density estimation map showing the distribution of oil and gas drilling activity within the study area compared to the Devonian oil and gas drilling targets. Note that the majority of the drilling activity in the central and eastern section of the study area is Devonian target dominant and that there is not a Devonian target component in the western portion of the study area. Source: created by author, basemap data from KGS (2014).

Finally, the lack of Devonian production to the west is the result of the reluctance of operators to drill past the first few occurrences of oil and/or gas with typical well depths not exceeding 2000 vertical feet. Therefore, as drillers move to the west and the Illinois Basin deepens younger and younger formations are encountered without reaching the Devonian units and productive horizons.

When producing horizons are examined based upon well completion, reported show horizons, and/or casing perforations as a clear pattern of oil and/or gas reservoir locations becomes apparent. Figure 6.11 shows the distribution of Upper Devonian production within the study area associated with the New Albany Shale (the top of the shale shown is transparent gray and the base is shown in opaque blue in Figure 6.11). This production is typically restricted to the Shrewsbury and Nash gas fields of the southern portion of Grayson County, northeastern Butler County, and northwestern portion of Edmonson County, following the crest of the Moorman Syncline and is associated with the New Albany Shale. In the Shrewsbury and Nash fields, there is minor production in the lower Mississippian limestone units where the New Providence Shale is absent or extremely thin. Minor occurrences of gas are also found in the Richardsville and Anna fields of the northern portion of Warren County. This production is typically associated with upward migration along faults and gas pockets above larger pools of oil along the southern flank of the Pennyrile Fault Zone. Similarly, Figure 6.12 shows the clear separation of the gas production horizon of the New Albany Shale associated with the Shrewsbury and Nash fields and the Middle to Lower Devonian oil production horizons of the Bowling Green Consolidated, Anna, Richardsville, Arthur, and Sandridge fields. The producing intervals for each of the mapped wells fall between the base of the

New Albany Shale (transparent blue in Figure 6.12) and the top of the Silurian Corniferous (opaque green in Figure 6.12). Several sections of lower Devonian production in the southeastern section are also visible above the Silurian Corniferous.

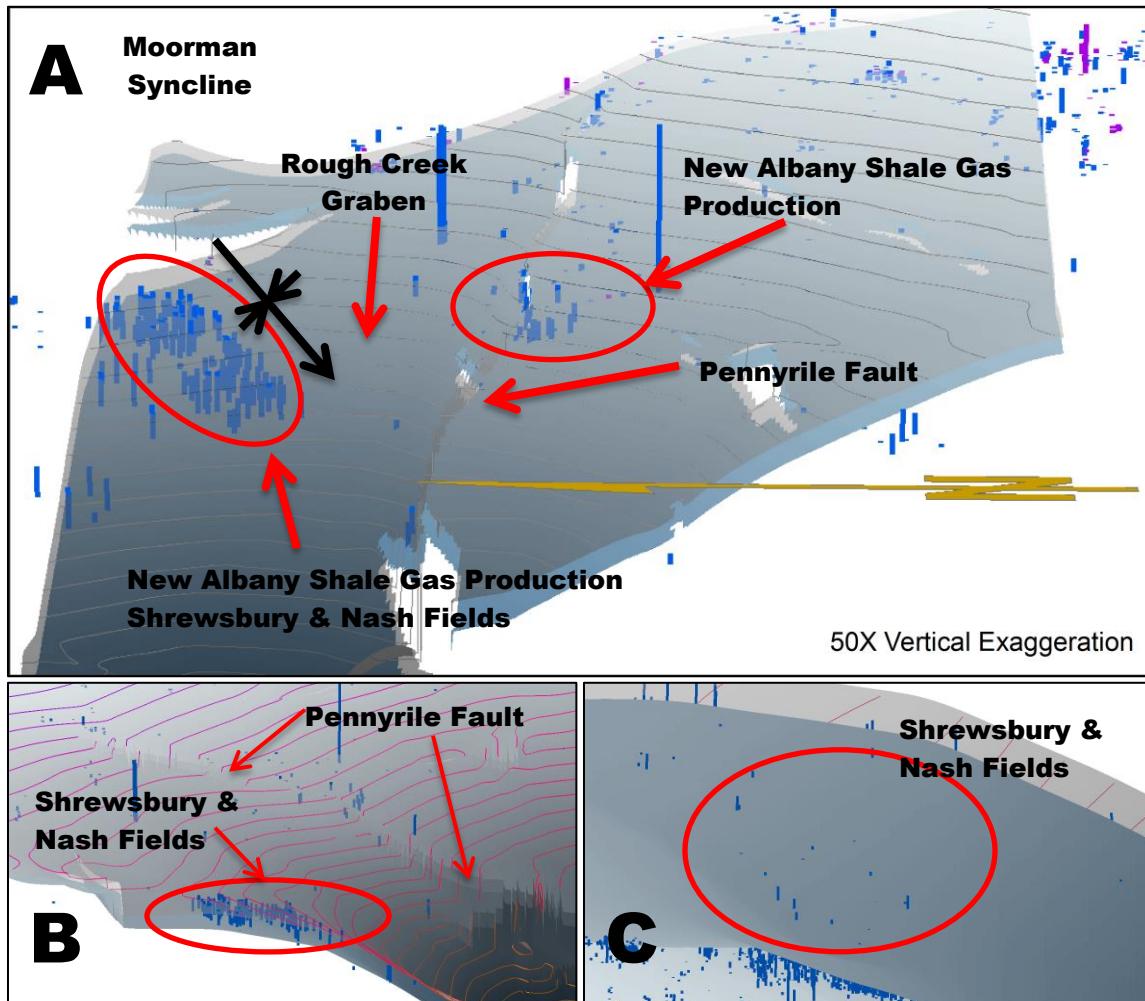


Figure 6.11. New Albany Shale Production Model.

Transparent gray layer represents modeled New Albany Shale top and opaque blue layer represents the New Albany Shale base. Well production intervals extruded in blue. North arrow points left in part A and is set level to vertical datum

- A. view looking east with Shrewsbury and Nash fields labeled.
- B. view looking south with the same Shrewsbury and Nash fields labeled.
- C. view looking south from underneath with Shrewsbury and Nash fields labeled. Note: Minor sections show production in the Mississippian, with the remaining visible production occurring below the base of the top of the modeled New Albany Shale and above the base of the modeled New Albany Shale shown in part C. Source: created by author, basemap data modified from KGS (2014).

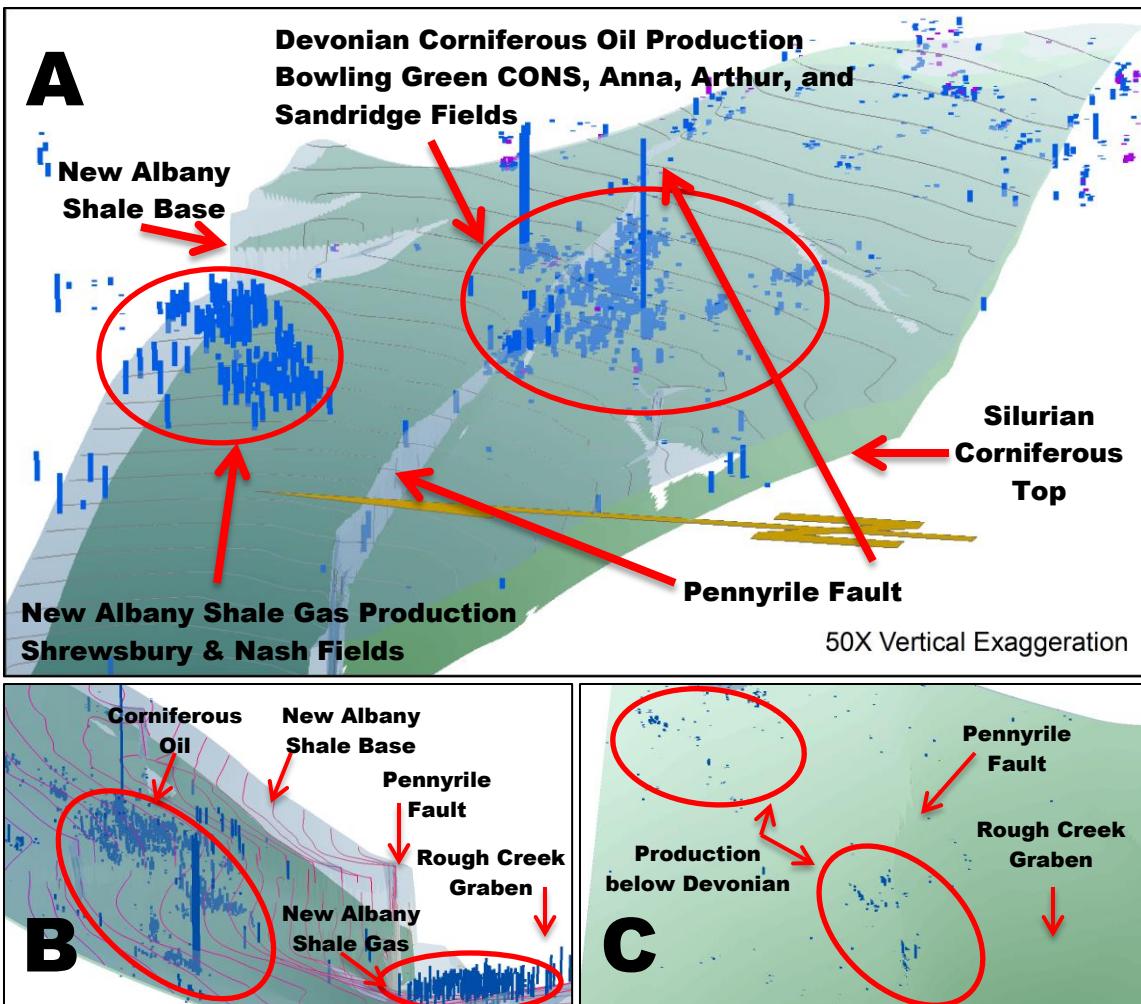


Figure 6.12. Devonian Corniferous Production Model.

Transparent blue layer represents modeled New Albany Shale base and opaque green layer represents top of the Silurian Corniferous Limestone top. Well production intervals extruded in blue. North arrow pointing left set level to the vertical datum.

A. view facing east looking up the Rough Creek Graben.

B. looking south down the Rough Creek Graben.

C. looking west from underneath the Silurian Corniferous unit.

Note: Wells producing from the New Albany Shale are shown in bright blue and wells producing from beneath the New Albany Shale are shown in gray-blue remaining visible production occurring below the base of the modeled Shale layer within the Devonian Corniferous Limestone units. Source: created by author, basemap data modified from KGS (2014).

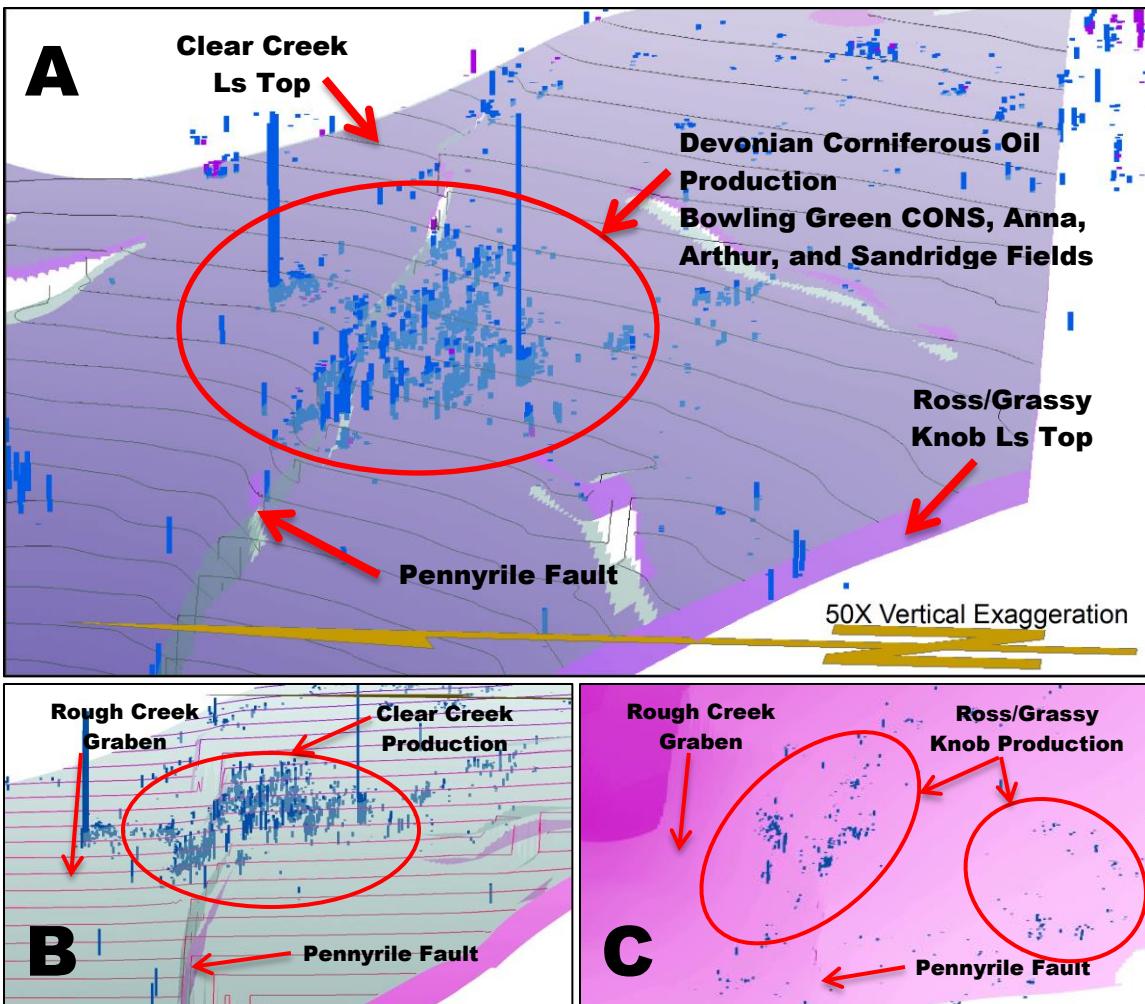


Figure 6.13. Clear Creek Limestone Production Model.

Transparent blue/green layer represents modeled Clear Creek Limestone top and opaque purple layer represents top of the Ross/Grassy Knob Limestone layer. Well production intervals extruded in blue. North arrow points left and is set level to the vertical datum.

A. view facing east of the Devonian Corniferous wells

B. view facing east of the Clear Creek Limestone wells

C. view facing east underneath looking up at the base of the Ross/Grassy Knob Limestone

Note: Production shown in bright blue is associated with the Sellersburg/Jeffersonville Limestone units above the Clear Creek Limestone, wells in gray-blue are wells that fall between the top of the Clear Creek Limestone top and the Ross/Grassy Knob Limestone top. Oil production is dominantly from the Clear Creek Limestone Unit. Source: created by author, basemap data modified from KGS (2014).

These sections of production are typically associated with thinning and truncation of Middle and Lower Devonian units against the base of the New Albany Shale. When these sections are examined in relation to the Clear Creek Limestone, as illustrated in Figure 6.13, then the conclusion is that most of the Devonian Corniferous oil is associated with the Clear Creek Limestone. The majority of the producing intervals fall between the top of the Clear Creek Limestone (shown in transparent blue in Figure 6.13) and the top of the Ross/Grassy Knob Limestone units (shown in opaque purple in Figure 6.13). The producing intervals above the Clear Creek surface are associated with production from the Sellersburg/Jeffersonville Limestone units or the Dutch Creek Sandstone. The Middle and Lower Devonian production intervals located in the south eastern corner of the study area are associated with the thinning and truncation of the Devonian Corniferous against the base of the New Albany Shale.

#### *6.2.3: Lower Devonian Structure and Porosity Trends Explained*

The Lower Devonian Clear Creek Limestone possesses an interesting series of porosity breaks in its lower portion. All geophysical well logs examined in this study show a minimum of two, but commonly three, porosity breaks, with the smallest being on the order of 5 feet thick with a measured Compensated Density Porosity between 8% and 10% when run on a limestone matrix and the largest, typically the lowest porosity break, on the order of 25 feet thick with a measured Compensated Density Porosity break as high as 12%. With the separation and overall tracking of the Neutron Density Porosity and the Compensated Density Porosity it is clear that this lower unit is most likely dolomitic in composition. When the Compensated Density Porosity is recalibrated for a dolomitic matrix the average porosity of the lower unit can exceed 14%.

Based upon the work presented by Seale (1985), the Middle to Upper Silurian units are potential reef structures. These reef structures were not identified through core directly but are supported by well cuttings from the area as being consistent with reef material. This evidence of a potential reef is supported by the occurrence of the Silurian-Devonian unconformity developed at the base of the Devonian age rocks presented by Freeman (1941; 1951). The potential for the formation of a series eroded skeletal debris piles surrounding pinnacles and reef cores of Silurian reef systems has been documented by Freeman (1941; 1951), Jobe and Saller (1995), and Lucia (1999). Large shoaling bodies made up of the same material can develop large interconnected systems very similar to the highly porous bryozoan mound aprons presented by Jobe and Saller (1995). Lucia (1999) also presents the notion that, during formation of subsequent unconformities in the Middle and Upper Devonian, an increased amount of secondary dolomitization of the already highly porous Silurian grainstone units below the unconformities can develop further enhanced porosity. This secondary porosity enhancement can generate a highly connective, highly porous to vugular, units that can act in some locations as super-efficient transmission units. These same highly connective, highly porous to vugular, units in locations where structure is sufficient to trap the hydrocarbon can be highly productive dolomitic limestone reservoirs. This gives the Lower Clear Creek Limestone unit of the Devonian Corniferous substantial drilling and production potential for future operations anywhere when there is sufficient structure to act as a trapping mechanism.

## **Chapter 7: Conclusions and Future Work**

### **7.1: Conclusions**

The Devonian reservoirs in south central Kentucky are very complex, exhibiting several styles of hydrocarbon traps in a relatively small area. Sections of the reservoir and trap system demonstrate a self-sourcing self-trapping system. Other sections are dominated by a combination of structural and stratigraphic trapping mechanisms associated with truncation of strata against a confining shale layer. Other sections exhibit fault induced juxtaposing of stratigraphically younger source rock structurally lower than the stratigraphically older reservoir rock with overall shale cap and fault related migration and charging pathways.

Generalized characteristics of the Clear Creek Limestone with pronounced laterally extensive basal high porosity zones and draped geometry support the 1985 Seale Silurian reef-trend hypothesis. Coburn (1986) and Whitaker (1988) also supported the favorability of a southern extension of the Silurian age reef system present in Indiana. Description of the distribution of rocks from the well cuttings and study of geophysical logs in addition to the geometry of the productive regions of the Southern Pennyvile Shelf add validity to a series of buried and weathered Silurian age pinnacle reef systems.

The pervasive Clear Creek porosity trend is reminiscent of that described by Jobe and Saller (1995), relating such porosity to weathered remnants of bryozoan mounds and associated grainstone aprons and debris piles adjacent to reef cores. A large amount of secondary porosity enhancement due to either partial dolomitization or secondary dissolution outlined by Lucia (1999) in Lower Clear Creek Limestone unit is also potentially related to unconformity development (supported by cuttings/sample

description and petrophysics) during the Middle Devonian associated with post Clear Creek deposition.

Hydrocarbon production data for the area are limited, but Devonian Corniferous hydrocarbon horizons appear to be the dominant producing units in the region. Minor amounts of hydrocarbon can be attributed to the Silurian and Ordovician horizons, and Mississippian and Pennsylvanian production either occurs in conjunction with Devonian production or is isolated to the west where deeper production horizons have yet to be explored.

## **7.2: Future Work**

### *7.2.1: Porosity Mapping*

The next step in this type of analysis would be to identify and map the three porosity zones associated with the Devonian Clear Creek limestone unit at the base of the Devonian Corniferous. Special attention would need to be paid to the lower Clear Creek porosity break due to the dolomitic limestone associated with this section. The presence of dolomitic limestone tends to inflate the typical bulk density log compensated for a limestone matrix. The porosity zones for the upper section of the Devonian Corniferous, including the Sellersburg/Jeffersonville limestones and the Dutch Creek Sandstone, would also need to be identified and mapped to establish their contribution to the overall porosity trends in the Devonian Corniferous section.

### *7.2.2: Higher Resolution Data*

To understand adequately the characteristics of the Siluro-Devonian Corniferous, a higher resolution dataset would need to be created. This higher resolution dataset would need to take advantage of a minimum well offset distance of at least 1000 feet or the 400

foot minimum well offset distance allowed between wells required by the state of Kentucky, allowing for a developed gridding system to fill in all of the remaining gaps, whether the wells drilled are productive or not. Each well should have a series of detailed geophysical logging suites run including: Gamma Ray log, Bulk Formation Density, Neutron Porosity, Caliper, Temperature, Eight Band Microresistivity Bore Hole Imaging, and Medium and Deep Induction Electro-Resistivity. The combination of these geophysical logging suites will be more than sufficient to characterize the petrophysics of the Silurian-Devonian units present within the Corniferous subsurface.

#### *7.2.3: Rectifying Fault Data*

Incorporation of high-resolution fault data and rectification of existing fault data on the 1:24,000 scale within the existing models is needed to identify the subtle nuances of the currently mapped fault systems. This additional data would minimize the generalizations and assumptions made by the use of the 1:500,000 scale fault data commonly used to generate this type of model. Further fault rectification should advance the understanding of the migration potential at the boundaries between the Rough Creek Graben and the bounding fault systems.

#### *7.2.4: Ground Truthing with Geophysical Data*

All geophysical data must have adequate ground truthing through the analysis of core and well cuttings and, whenever possible, the addition of other geophysical techniques such as 2-D and 3-D seismic. Geophysical data comparison to outcrop data, whenever possible, would also aid in the ground truthing of the compiled down-hole wireline geophysical logging techniques. This should help to confirm the validity and accuracy of the original wireline logging tools.

#### *7.2.5: Well Cuttings and Core Analysis (Silurian Reef Trend??)*

Special attention must be paid to the region concerning the identification of buried Silurian age reef systems in Warren County. Additional analysis of the core and well cuttings from this area will be needed to confirm the potential extension of Silurian age reef systems originally presented by Seale (1985). His thesis concerned the extension of the Silurian age reef systems from southern Indiana south into Kentucky along the flank of the Illinois Basin north of the Rough Creek Graben, through the Rough Creek Graben with an eastward offset, and south of the Rough Creek Graben into Warren County.

## References

- Allen, P.A., Allen, J.R., 2005. *Basin analysis: Principles and Application*, 2nd Edn. Malden, MA: Blackwell Publishing Company.
- Asquith, G.B., Krygowski, D., Henderson, S., Hurley, N., 2004. *Basic well log analysis*, 2nd Edn. Tulsa, OK: American Association of Petroleum Geologists, Methods in Exploration Series 16.
- Bawiec, W.J., Grundy, W.D., 1992. Computer generated surfaces and grids of the geometry, rock type and chemistry of a bedded mineral deposit. In Hamilton, D.E., Jones, T.A., (eds.) *Computer Modeling of Geologic Surfaces and Volumes..* Tulsa, OK: American Association of Petroleum Geologists Computer Applications in Geology 1, 37-46.
- Becker, L.E., Keller, S.J., 1976. *Silurian reefs in southwestern Indiana and their relation to petroleum accumulation*. Bloomington, IN: Indiana Geological Survey. Occasional Papers 19.
- Berry, J.K., 2000. Geographic information systems (GIS) technology: a brief history, trends, and probable future. In Coburn, T.C., Yarus, J.M. (eds.) *Geographic Information Systems in Petroleum Exploration and Development*. Tulsa, OK: American Association of Petroleum Geologists, Computer Applications in Geology 4, 49-16.
- Bertagne, A.J., Leising, T.C., 1990. Interpretation of seismic data from the Rough Creek Graben of Western Kentucky and Southern Illinois. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 199-208
- Bethke, C.M., Oltz, D.F., Reed, J.D., 1990. Long-range petroleum migration in the Illinois Basin. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 455-472.
- Bonham-Carter, G., 2000. An overview of GIS in the geosciences. In Coburn, T.C., Yarus, J.M. (eds.) *Geographic Information Systems in Petroleum Exploration and Development*. Tulsa, OK: American Association of Petroleum Geologists, Computer Applications in Geology 4, 17-26.
- Bristol, H.M., 1974. *Silurian pinnacle reefs and related oil production in Southern Illinois*. Urbana, IL: Illinois State Geological Survey, Illinois Petroleum Series 102.

- Buschbach, T.C., Kolata, D.R., 1990. Regional setting of Illinois Basin. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 29-55.
- Cluff, R. M., Byrnes, A. P. (1990). Lopatin analysis of maturation and petroleum generation in the Illinois Basin. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 425-454.
- Coburn, G.W., 1986. Silurian of the Illinois Basin: A carbonate ramp. *Oil and Gas Journal* 84(40), 96-100.
- Coburn, T.C., 2000. On the implementation of GIS for petroleum exploration and development: issues and perspectives. In Coburn, T.C., Yarus, J.M. (eds.) *Geographic Information Systems in Petroleum Exploration and Development*. Tulsa, OK: American Association of Petroleum Geologists, Computer Applications in Geology 4, 61-68.
- Coburn, T.C., Yarus, J.M., 2000. GIS and geostatistics: a marriage of technologies. In Coburn, T.C., Yarus, J.M. (eds.) *Geographic Information Systems in Petroleum Exploration and Development*. Tulsa, OK: American Association of Petroleum Geologists, Computer Applications in Geology 4, 295-298.
- Dana, P.L., Scobey, E.H., 1941. Cross section of Chester of Illinois Basin. *American Association of Petroleum Geologists Bulletin* 25(5). 871-882.
- Davis, H.G., 1990. Pre-Mississippian hydrocarbon potential of the Illinois Basin In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 473-498.
- Davis, R.W., Plebuch, R.O., Whitman, H.M., 1974. *Hydrology and geology of deep sandstone aquifers of Pennsylvanian age in part of the western coal field region, Kentucky*. Lexington, KY: Kentucky Geological Survey, United States Geological Survey Report of Investigations 15. .
- Day, R. A., Talaat, K., Hoffman, K. S. (2000). Reservoir characterization of a stratigraphically and structurally complex Gulf of Suez oil field using three-dimensional modeling and GIS techniques. In Coburn, T.C., Yarus, J.M. (eds.) *Geographic Information Systems in Petroleum Exploration and Development*. Tulsa, OK: American Association of Petroleum Geologists, Computer Applications in Geology 4, 205-212.
- DGI (Division of Geographic Information), 2014. 10-Meter Digital Elevation Model. Frankfort, KY: DGI. Accessed January 14<sup>th</sup> at:  
[ftp://ftp.kymartian.ky.gov/dem\\_10m\\_ns/](ftp://ftp.kymartian.ky.gov/dem_10m_ns/)

Dhont, D., Luxey, P., Chorowicz, J., 2005. 3-D modeling of geologic maps from surface data. *American Association of Petroleum Geologists Bulletin* 89(11), 1465-1474.

DNR (Department of Natural Resources), 2014. Production Reports Database. Frankfort, KY: DNR, Division of Oil and Gas. Accessed January 12<sup>th</sup> at:  
<http://oilandgas.ky.gov/Pages/ProductionReports.aspx>

Doveton, J.H., 1994. Theory and applications of vertical variability measures from Markov chain analysis. In Doveton, J.H. (ed.) *Stochastic Modeling and Geostatistics: Principles, Methods, and Case Studies*. Tulsa, OK: American Association of Petroleum Geologists, Computer Applications in Geology 3, 55-64.

Droste, J. B., Horowitz, A.S., 2001. *The New Harmony group (lower Devonian) revisited*. Bloomington, IN: Indiana University, Proceedings of the Indiana Academy of Science 110(1-4), 23-27.

Droste, J.B., Keller, S.J., 1989. *Development of the Mississippian-Pennsylvanian unconformity in Indiana..* Bloomington, IN: Department of Natural Resources, Geological Survey Occasional Paper 55.

Droste, J.B., Furer, L.C., Horowitz, A.S., 2000. *Patterns of deposition during the early Pennsylvanian (Morrowan) in the Illinois Basin*. Bloomington, IN: Indiana Geological Survey Special Report 62. .

Freeman, L.B., 1941. Devonian subsurface strata in Western Kentucky. *American Association of Petroleum Geologists Bulletin* 25(4), 668-712.

Freeman, L.B., 1951. *Regional aspects of Silurian and Devonian stratigraphy in Kentucky*. Lexington, KY: Kentucky Geological Survey, Bulletin (6), series ix.

Freeman, L.B., 1953. *Regional subsurface stratigraphy of the Cambrian and Ordovician in Kentucky and vicinity*. Lexington, KY: Kentucky Geological Survey, Bulletin (12), series ix.

Gooding, P.J., 2012. Unconformity, karst, hydrocarbons, minerals, environments, and structures present in the Cambrian – Ordovician Knox group in Kentucky: An example from South-central Kentucky. In Derby, J.R. Fritz, R.D., Longacre, S.A., Morgan, W.A., Sternbach, C.A. (eds.) *The Great American Carbonate Bank: The Geology and Economic Resources of the Cambrian-Ordovician Sauk Megasequence of Laurentia*. Tulsa, OK: American Association of Petroleum Geologists Memoir 98, 1103-1164.

- Goovaerts, P., 2006. Geostatistical modeling of the spaces of local, spatial, and response uncertainty for continuous petrophysical properties. In Coburn, T.C., Yarus, J.M., Chambers, R.L. (eds.) *Stochastic Modeling and Geostatistics: Principles, Methods, and Case Studies, Volume II*. Tulsa, OK: American Association of Petroleum Geologists Computer Applications in Geology 5, 59-79.
- Greb, S. F., Hendricks, R. T., Chesnut Jr., D. R. (1993). *Fossil beds of the Falls of the Ohio*. Lexington, KY: Kentucky Geological Survey Special Publication 19, Series xi.
- Hamilton, D.E., Henize, S.K., 1994. Computer mapping of pinnacle reefs, evaporites, and carbonates: northern trend, Michigan Basin. In Yarus, J.M., Chambers, R.L. (eds.) *Stochastic Modeling and Geostatistics: Principles, Methods, and Case Studies*. Tulsa, OK: American Association of Petroleum Geologists, Computer Applications in Geology 3, 19-20
- Hickman, J. (2010). *Rough Creek Graben consortium final report*. Lexington, KY: Kentucky Geological Survey Special Report. Available online at: [kgs.uky.edu/kgsweb/olops/pub/kgs/CNR55.../CNR55\\_12.pdf](http://kgs.uky.edu/kgsweb/olops/pub/kgs/CNR55.../CNR55_12.pdf).
- Hohn, M.E., McDowell, R.R., 1994. Geostatistical analysis of oil production and potential using indicator kriging. In Yarus, J.M., Chambers, R.L. (eds.) *Stochastic Modeling and Geostatistics: Principles, Methods, and Case Studies*. Tulsa, OK: American Association of Petroleum Geologists, Computer Applications in Geology 3, 121-130.
- Howard, R.H., 1990. Hydrocarbon reservoir distribution in the Illinois Basin. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 299-327.
- Jobe, H., Saller, A., 1995. Oil reservoirs in grainstone aprons around bryozoan mounds, upper Harrodsburg limestone, Mississippian, Illinois Basin. *American Association of Petroleum Geologists Bulletin* 79(6), 783-799.
- Journel, A G., 1994. Geostatistics and reservoir geology. In Yarus, J.M., Chambers, R.L. (eds.) *Stochastic Modeling and Geostatistics: Principles, Methods, and Case Studies*. Tulsa, OK: American Association of Petroleum Geologists, Computer Applications in Geology 3, 19-20
- KGS (Digital Mapping Team), 2014a. Carter 1-Minute and 5-Minute Grid Database. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at: <http://www.uky.edu/KGS/gis/geology.htm>
- KGS (Digital Mapping Team), 2014b. 1:500,000 Geological Faults Database. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at: <http://www.uky.edu/KGS/gis/geology.htm>

KGS (Digital Mapping Team), 2014c. 1:500,000 Geological Structures Database. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at:  
<http://www.uky.edu/KGS/gis/geology.htm>

KGS (Digital Mapping Team), 2014d. Oil and Gas Records Database. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at:  
<http://www.uky.edu/KGS/emsweb/data/kyogshape.html>

KGS (Digital Mapping Team), 2014e. Kentucky Oil and Gas Fields Database. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at: <http://kgs.uky.edu/kgsweb/mapdata.asp>

KGS (Kentucky Geological Survey), 2014a. Oil and Gas Records Database. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at:  
<http://kgs.uky.edu/kgsweb/DataSearching/OilGas/OGSearch.asp>

KGS (Kentucky Geological Survey), 2014b. Geological Formation Tops Database. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at:  
<http://kgs.uky.edu/kgsweb/DataSearching/OilGas/OGSearch.asp>

KGS (Kentucky Geological Survey), 2014c. Oil and Gas Well Production Database. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at:  
<http://kgs.uky.edu/kgsmap/OGProdPlot/OGProduction.asp>

KGS (Kentucky Geological Survey), 2014d. County Boundaries Database. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at: <http://www.uky.edu/KGS/gis/bounds.htm>

KGS (Kentucky Geological Survey), 2014e. Kentucky State Boundary. Lexington, KY: KGS. Accessed January 12<sup>th</sup> at: <http://www.uky.edu/KGS/gis/bounds.htm>

Kolata, D.R., 1990. Overview of sequences. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 59-73.

Kolata, D.R., Nelson, W.J., 1990. Basin-forming mechanisms of the Illinois Basin. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 287-292.

Krivoruchko, K., Gribov, A. Ver Hoef, J.M., 2006. A new method for handling the nugget effect in kriging. In Coburn, T.C., Yarus, J.M., Chambers, R.L. (eds.) *Stochastic Modeling and Geostatistics: Principles, Methods, and Case Studies, Volume II*. Tulsa, OK: American Association of Petroleum Geologists Computer Applications in Geology 5, 81-89.

- Kushnir, G., Yarus, J.M., 1992. Modeling anisotropy in computer mapping of geologic data. In Hamilton, D.E., Jones, T.A. (eds.) *Computer Modeling of Geologic Surfaces and Volumes*. Tulsa, OK: American Association of Petroleum Geologists Computer Applications in Geology 1. 75-92.
- Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.), 1990. *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51.
- London, J.T., 2014. *Geologic factors affecting hydrocarbon occurrence in paleovalleys of the Mississippian-Pennsylvanian unconformity in the Illinois Basin*. M.S. Geoscience Thesis, Department of Geography and Geology, Western Kentucky University, Bowling Green, KY. Available online at: <http://digitalcommons.wku.edu/theses/1355/>
- Lucia, F., 1999. *Carbonate reservoir characterization*. Berlin, Germany: Springer.
- Mariño, J., Marshak, S., Mastalerz, M., 2015. Evidence for stratigraphically controlled paleogeotherms in the Illinois Basin based on vitrinite-reflectance analysis: Implications for interpreting coal-rank anomalies. *American Association of Petroleum Geologists Bulletin* 99(10), 1803-1825.
- Mast, R.F., Howard, R.H., 1990. Oil and gas production and recovery estimates in the Illinois Basin. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 295-298.
- Mastalerz, M., Schimmelmann, A., Drobnik, A., Chen, Y., 2013. Porosity of Devonian and Mississippian New Albany Shale across a maturation gradient: Insights from organic petrology, gas adsorption, and mercury intrusion. *American Association of Petroleum Geologists Bulletin* 97(10), 1621-1643.
- Nelson, W.J., 1990. Structural styles of the Illinois Basin. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 209-243.
- Neuendorf, K.K., Mehl, J.P., Jackson, J.A. (eds.), 2011. *Glossary of Geology*. Alexandria, VA: American Geological Institute.
- Nosow, E., 1959. *Some Devonian-Silurian stratigraphic relationships on the west flank of the Cincinnati Arch*. Proceedings of the Technical Session, Kentucky Oil and Gas Association 23rd Annual Meeting, June (5), 67-81.
- Nuttall, B.C., 2014. Review of Kentucky oil and gas production, 2010. *Kentucky Geological Survey Information Circular 30*, xii.

- Oltz, D.F., Leetaru, H.E., Seyler, B., Whitaker, S.T., 1991. An integrated approach to reservoir characterization in the Illinois Basin: multidisciplinary studies. In Sneider, R., Massell, W., Mathis, R., Loren, D., Wichmann, P., (eds.) *The Integration of Geology, Geophysics, Petrophysics and Petroleum Engineering in Reservoir Delineation, Description and Management*. Tulsa, OK: American Association of Petroleum Geologists SP 26, 38-60.
- Schwalb, H.R., Wilson, E.N., Sutton, D.G., 1972. Oil and gas map of Kentucky, sheet 2, west-central part. Lexington, KY: Kentucky Geological Survey Map Series X.
- Seale, G.L., 1985. Relationship of possible Silurian reef trend to middle Paleozoic stratigraphy and structure of the southern Illinois Basin of western Kentucky. Lexington, KY: Kentucky Geological Survey Thesis Series 3.
- Seyler, B., Cluff, R.M., 1990. Petroleum traps in the Illinois Basin. In Leighton, M.W., Kolata, D.R., Oltz, D.T., Eidel, J.J. (eds.) *Interior Cratonic Basins*. Tulsa, OK: American Association of Petroleum Geologists Memoir 51, 361-401.
- Shaver, R.H., Childs, O.E., Steele, G., Salvador, A., Lindberg, F.A., (eds.), 1984. *Midwestern basin and arches region-correlation of stratigraphic units in North America (COSUNA)*. Tulsa, OK: American Association of Petroleum Geologists Correlation Chart Series
- Siever, R., 1951. The Mississippian-Pennsylvanian unconformity in southern Illinois. *American Association of Petroleum Geologists Bulletin* 35(3), 542-581.
- Sloss, L.L., 1963. Sequences in the cratonic interior of North America. *Geological Society of America Bulletin* 74, 93-114.
- Srivastava, R.M., 1994. The visualization of spatial uncertainty. In Yarus, J.M., Chambers, R.L. (eds.) *Stochastic Modeling and Geostatistics: Principles, Methods, and Case Studies*. Tulsa, OK: American Association of Petroleum Geologists Computer Applications in Geology 3, 339-345.
- Turner, A.K., 2000. Geoscientific modeling: past, present, and future. In Coburn, T.C., Yarus, J.M. (eds.) *Geographic Information Systems in Petroleum Exploration and Development*. Tulsa, OK: American Association of Petroleum Geologists Computer Applications in Geology 4, 27-36.
- Turner, A.K., 2006. Challenges and trends for geological modeling and visualization. *Bulletin of Engineering Geology and the Environment* 65(2), 109-127.

- USEIA (United States Energy Information Administration), 2015. *Annual energy outlook 2015 with projections to 2040*. Washington, D.C.: U.S. Department of Energy, Office of Integrated and International Energy Analysis. Retrieved from [http://www.eia.gov/forecasts/aeo/pdf/0383\(282015\)29.pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(282015)29.pdf).
- Wade, T., Sommer, S. (eds.), 2006. *A to Z GIS: An Illustrated Dictionary of Geographic Information Systems*. Redlands, CA: ESRI Press.
- Weller, J.M., Bell, A.H., 1937. Illinois Basin. *American Association of Petroleum Geologists Bulletin* 21(6), 771-788.
- Whitaker, S.T., 1988. *Silurian pinnacle reef distribution in Illinois: model for hydrocarbon exploration*. Champaign, IL: Illinois State Geological Survey Illinois Petroleum 130.
- Xie, Z., Yan, J., 2008. Kernel density estimation of traffic accidents in a network space. *Computers, Environment and Urban Systems* 32(5), 396-406.
- Young, R.A., 2009. The marrying of petrophysics with geophysics results in a powerful tool for independents. *E-Seis, Inc. White Paper*. Retrieved March 6, 2016, from <http://e-seis.com/wp-content/uploads/2014/11/The-Marrying-of-Petrophysics-with-Geophysics.doc.pdf>
- Zuppann, C.W., O'Neal, M., 1999. Three-dimensional modeling of the Mississippian Ste. Genevieve limestone shoal complex at Owensboro north consolidated field, Gibson County, Indiana. *American Association of Petroleum Geologists Bulletin* 83(8), 1375.

## APPENDICES

### Appendix I: Data Table Reference Tables

<b>Formation Tops (T) codes</b>	<b>Description</b>	<b>Purpose</b>
TS	Surface elevation	True surface elevation based on the 10 meter Digital Elevation Model
T1	Top 1	New Albany Shale top
T2	Top 2	Base of the New Albany Shale coincident with the top of the Devonian Corniferous
T3	Top 3	Upper Devonian Corniferous, Includes the Sellersburg/Jeffersonville Limestone units and the Dutch Creek Sandstone unit
T4	Top 4	Clear Creek Limestone unit
T5	Top 5	Ross/Grassy Knob Limestone unit, basal Devonian limestone unit
T6	Top 6	Silurian Corniferous, contains all middle/upper Silurian limestones: Bailey, Decatur, Brownsport, Laurel, Louisville, and Dixon
T7	Top 7	Waldron Shale, base marker bed for study area

<b>Isopach (I) codes</b>	<b>Description</b>	<b>Purpose</b>
I1	Thickness 1	Calculated New Albany Shale
I2	Thickness 2	Calculated Upper Devonian Corniferous Includes: Sellersburg/Jeffersonville limestones and Dutch Creek Sandstone
I3	Thickness 3	Calculated Clear Creek Limestone Unit
I4	Thickness 4	Calculated Ross/Grassy Knob Limestone units
I5	Thickness 5	Calculated Lower Devonian Corniferous Includes: Clear Creek and Ross/Grassy Knob Limestone units
I6	Thickness 6	Calculated Devonian Corniferous Includes all sub-shale Devonian units
I7	Thickness 7	Calculated Silurian Corniferous Includes all Silurian units down to the Waldron Shale

<b>Codes</b>	<b>Description</b>	<b>Purpose</b>
DEM	Digital Elevation Model	Earth surface satellite imagery SRTM, 10 meter resolution
SS	Sub Sea	Elevation relative to modern sea level as base datum
NAS	New Albany Shale	Top formation in this study
DCN	Devonian Corniferous	All Devonian formations present underneath the New Albany Shale
UDCN	Upper Devonian Corniferous	Upper most Devonian Corniferous strata, contains: Sellersburg, Jeffersonville, Dutch Creek formations
LDCN	Lower Devonian Corniferous	Lower Devonian Corniferous strata, contains: Clear Creek and Ross/Grassy Knob formations
CLCK	Clear Creek Limestone	Dominant Devonian limestone unit, typically the cleanest unit in the Devonian
RSGC	Ross/Grassy Knob Limestone Units	Lowest Devonian unit, typically a shaly limestone separating the Devonian and Silurian systems
SCN	Silurian Corniferous	All Silurian formations down to the Waldron Shale present underneath the New Albany Shale
WDRN	Waldron Shale	Shale unit marking the base of the Corniferous for this study
t	Top	Formation Top
b	Base	Formation Base
TD	Total well depth	The deepest point in the well
TD Formation	Formation at total well depth	Identifies the formation the well terminated in
Deepest Pay	Deepest reported pay horizon and formation	Indicates the productive zones and production perforations depths
IOF IP	Initial Open Flow and Initial Production	Amounts of oil and/or gas produced prior to stimulation and pumping

BOPD	Barrels of Oil per Day	Volume in 55 Gallon Barrels produced per day
MCFGPD	Thousand Cubic Feet of Gas per Day	Volume of gas in 1,000 FT <sup>3</sup> produced per day
pres	Presence	Is the formation present in the subsurface: P_on log (present on log), P (present but not on log), N/P (not present in the subsurface), and N/A (no data on report)
ana	Kriging analysis value	Used for final surface generation
src	source	Identifies where the analysis value is derived from: IC (isopach calculation), DP (Driller's pick), and LP (ADR log pick), ADR (Andrew D Reeder) , FMRP (formation report or sample log), DRRP (Driller's report or Driller's notes), and N/A (no data available)
E	extraction raw model cell value	Extracted point data from a Kriging raster model, no modification of model
ex	extraction zeroed model cell value	Extracted point data from a Kriging raster model, zeroed model that cannot have a negative value
PALEO	Paleozoic	Catch all term for unknown formation
PENN	Pennsylvanian	Youngest rock units in the study area, typically sandstone
MISS	Mississippian	Younger rocks in the study area, typically limestones
DEV	Devonian	Target rocks in this study, mix dominantly limestone with a mix of siliciclastic
SIL	Silurian	Rock units often confused with Devonian Corniferous, mentioned in this study
ORD	Ordovician	Older rock units underlying the Silurian units, commonly productive in othe parts of Kentucky
CAM	Cambrian	Oldest rocks sedimentary in the Illinois Basin, typically resting on Precambrian metamorphic basement material

<b>KGS Well Code</b>	<b>Description</b>	<b>KGS Well Code</b>	<b>Description</b>
OIL	Oil Producing	WS	Water Supply
GAS	Gas Producing	WD	Water Disposal
O&G	Oil and Gas Producing	D&A	Dry and Abandoned
DG	Domestic Gas Producing (Low Volume)	TA	Temporarily Abandoned
SRI	Secondary Recovery Injection	IA	Improperly Abandoned
OB	Observation	AB	Known to be abandoned without plug data
LOC	Location Only (new Permit or drilling site)	UN	Unknown

## Appendix II: Well Data Tables (KGS Sourced)

KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
1360	16003014910000	43072	3416876.66	4738354.25	13-C-38
1561	16003007410000	45404	3458207.18	4802137.98	5-D-41
1612	16003000470000	41949	3483660.56	4775349.23	6-E-40
1647	16003011110000	45302	3471482.64	4783247.53	17-E-40
1677	16003009250000	32724	3472370.55	4793615.44	19-E-40
2089	16009007640000	37722	3534879.02	4859457.36	18-G-43
2182	16009020030000	31113	3561671.29	4864980.82	19-H-43
2183	N/A	37365	3558364.35	4854601.07	24-H-43
2619	16031008790000	31520	3560297.41	4646499.52	22-H-34
2626	16031006980000	39665	3606297.04	4720998.28	9-I-37
2627	16031005300000	25779	3642151.35	4617433.28	3-J-33
2628	16031010000000	33196	3619795.45	4616371.73	23-J-33
2631	16031006030000	30889	3658062.87	4687646.32	17-K-36
8245	16061006330000	43799	3549901.65	4805332.41	4-G-41
8247	16061000130000	52119	3552762.30	4800162.28	5-G-41
8249	16061006140000	17115	3572739.69	4766271.21	9-H-39
8254	16061006230000	42458	3595773.31	4751329.69	20-I-38
8255	16061007060000	44196	3589446.14	4749460.19	21-I-38
8268	16061006830000	45362	3598150.34	4751784.45	15-I-39
8288	16061000110000	45333	3639431.43	4734882.67	7-J-38
8840	16085002200000	39265	3642662.49	4740450.73	3-J-38
8852	16085000760000	45334	3642651.86	4736084.21	4-J-38
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
8853	16085000700000	44242	3642564.47	4731547.04	5-J-38
8856	16085002690000	33435	3676220.53	4689776.55	3-K-36
8870	16085003470000	37099	3663945.28	4697897.25	12-K-36
8884	16085000810000	49047	3650889.27	4712785.00	24-K-37
8922	16085000670000	42645	3664400.20	4744736.82	9-K-38
8929	16085000580000	40778	3662467.35	4745144.69	12-K-38
8931	16085000590000	40779	3658587.06	4743895.71	12-K-38
8942	16085000540000	40443	3660097.23	4734902.83	14-K-38
8949	16085000620000	41011	3654151.43	4735982.19	17-K-38
8950	16085000660000	42469	3653019.69	4736204.38	17-K-38
8966	16085004030000	9676	3663496.83	4753167.09	15-K-39
8970	16085004060000	23010	3669540.08	4792543.19	9-K-40
8974	16085003280000	27905	3695385.38	4699545.32	10-L-36
8979	16085004050000	51327	3695737.34	4723878.29	10-L-37
8985	16085004040000	34476	3687582.95	4789021.14	18-L-40
9892	16093000780000	34466	3699978.52	4840380.66	2-L-42
9948	16099000460000	49028	3612923.13	4840484.37	2-I-42

10018	16099000420000	48852	3631862.84	4834344.36	13-J-42
10037	N/A	N/A	3657945.69	4865432.98	12-K-43
12499	16141003820000	27525	3411741.86	4582620.91	16-C-32
12520	16141003280000	27313	3462114.08	4569064.99	3-D-31
12534	N/A	N/A	3463805.13	4631119.61	5-D-34
12535	N/A	N/A	3459329.15	4631842.01	5-D-34
12557	N/A	N/A	3451579.49	4631850.64	15-D-34
12581	16141001450000	43927	3478733.98	4584086.98	15-E-32
12585	16141001460000	43929	3473124.72	4598149.06	19-E-32
12588	16141003250000	31496	3490481.90	4618199.05	3-E-33
12589	16141000060000	31229	3492430.82	4619045.88	3-E-33
12611	N/A	N/A	3520972.48	4546776.66	2-F-30
12623	N/A	N/A	3524299.66	4576202.56	1-F-31
12632	N/A	N/A	3522806.97	4566656.89	3-F-31
12659	16141000020000	22869	3508666.77	4614779.98	13-F-33
16942	16213001690000	51675	3461619.12	4644199.29	2-D-34
16946	16213003250000	21198	3435370.50	4696975.51	21-D-36
16951	16213002870000	49204	3440270.57	4706138.96	16-D-37
17423	16227034420000	48700	3491491.80	4786207.55	3-E-40
17428	16227034980000	49698	3512875.40	4669445.35	9-F-35
17448	16227019460000	54287	3496846.03	4682575.82	24-F-36
17470	16227030980000	21660	3518036.03	4739648.70	8-F-38
17473	16227033080000	23327	3512095.60	4742939.35	9-F-38
17494	16227000790000	46003	3549465.71	4666485.56	3-G-35
17496	16227032860000	53611	3548625.84	4669677.57	9-G-35
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
17550	16227018770000	43731	3534079.69	4710096.46	17-G-37
17582	16227000320000	40775	3547794.56	4800030.00	6-G-41
17588	16227018580000	41757	3584069.80	4670082.54	2-H-35
17592	16227018890000	50450	3570632.17	4690979.88	13-H-36
17660	16227002070000	55338	3563206.41	4725286.81	20-H-37
17687	16227034950000	53498	3559748.91	4750118.09	21-H-38
18752	16177000070000	27937	3598457.80	4538339.52	17-I-30
21277	16003007800000	57010	3408240.95	4756761.99	24-C-39
21322	16009008350000	36782	3511517.66	4826935.42	15-F-42
22861	16099007500000	51490	3642503.65	4836328.51	3-J-42
23475	16141001570000	57869	3460954.47	4544462.74	3-D-30
23477	16141001500000	49443	3444522.41	4606315.93	16-D-33
24414	16213000250000	49923	3440559.65	4706934.26	17-D-37
24513	16227032050000	53269	3482331.45	4683336.74	7-E-36
24518	16227015470000	39504	3487237.02	4738989.96	8-E-38
24520	16227018490000	36744	3477131.44	4768108.15	12-E-39

24533	16227020100000	55622	3538112.13	4668209.94	13-G-35
24862	16227020750000	60334	3559502.64	4738747.38	23-H-38
24878	16003001480000	60371	3445339.93	4735451.02	17-D-38
24985	16061000230000	60465	3577159.65	4784658.59	7-H-40
24987	16061004180000	60426	3573495.01	4783900.17	7-H-40
25006	16227003290000	60434	3518240.68	4661276.57	7-F-35
25007	16227020960000	60439	3505451.55	4795169.23	20-F-40
25065	16003018050000	60558	3454321.55	4782839.80	7-D-40
25165	16183025680000	32217	3689170.63	4643673.11	13-L-34
26194	16009012110000	60701	3548319.31	4837476.92	3-G-42
26231	16061000240000	60715	3640366.63	4716121.20	3-J-37
26540	16031007830000	33829	3600266.83	4697023.54	12-I-36
26541	16031007850000	30586	3596854.80	4698465.10	20-I-36
26542	16031009130000	30086	3589442.51	4710837.34	24-I-37
26543	16031007320000	30888	3656681.42	4685494.99	17-K-36
26544	16031010230000	30891	3654376.19	4683945.16	17-K-36
26549	16227002700000	56521	3549427.11	4792874.58	2-G-40
26609	16227003480000	60772	3503701.46	4697507.75	20-F-36
26970	16227003540000	60827	3564717.59	4720772.37	19-H-37
27009	16085000910000	60871	3647351.66	4720639.17	22-K-37
27145	16227002140000	55509	3558975.09	4718598.54	22-H-37
27146	16227001540000	53677	3569182.85	4729824.36	15-H-38
27367	16227000120000	36470	3571926.06	4726344.36	11-H-37
27852	16213000270000	51614	3453990.09	4680228.41	6-D-36
28285	16227034490000	56265	3531967.72	4674248.92	20-G-35
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
28442	16085000260000	32777	3683086.36	4740158.25	18-L-38
28447	16085002210000	37825	3664093.58	4738199.64	8-K-38
28458	16085000350000	33453	3656842.03	4743144.06	19-K-38
28470	16085004470000	32467	3671311.12	4770927.58	2-K-39
29044	16227002890000	56947	3521135.77	4670371.99	2-F-35
29071	16227002880000	56946	3520599.95	4668816.88	2-F-35
29102	16227018990000	53066	3573053.86	4725262.44	10-H-37
30067	16061004100000	54510	3555582.11	4795853.29	21-H-40
30090	16061000150000	57281	3637881.21	4722229.83	9-J-37
30092	16227001620000	53908	3497119.99	4664026.27	23-F-35
30117	16227020180000	56160	3528351.92	4728191.52	25-G-38
30118	16141001620000	61257	3444152.23	4570963.96	19-D-31
30483	16227002330000	55907	3538883.19	4805684.70	14-G-41
30670	16227034060000	59058	3568976.12	4700335.13	11-H-36
30794	16085000890000	58067	3652785.75	4713289.38	18-K-37
30795	16085000900000	58678	3642886.02	4716020.15	3-J-37

30824	16009017070000	61489	3440994.42	4868903.73	20-D-43
31005	16003013430000	59250	3437599.07	4772607.14	21-D-39
31018	16061000160000	57626	3641110.92	4722283.47	2-J-37
31120	16003001320000	56850	3425238.54	4758190.46	7-C-39
31264	16227036910000	59923	3573036.12	4689350.78	13-H-36
31394	16099004250000	54619	3592460.03	4845577.05	20-I-42
32126	16227036830000	61702	3548281.48	4728444.31	6-G-38
32468	16227007690000	59604	3492312.66	4674477.27	1-E-35
32641	16009015840000	61817	3531777.98	4844667.06	20-G-42
32959	N/A	30738	3484235.30	4832417.25	7-E-42
33057	16227004140000	61834	3470551.68	4716323.77	18-E-37
33896	16141002350000	59282	3474658.52	4564759.40	17-E-31
34176	16061000280000	61908	3565199.26	4770148.05	19-H-39
34251	16227004370000	61975	3544512.35	4677922.58	10-G-35
34413	16003001700000	62083	3450817.81	4749340.12	11-D-38
34743	16227035070000	51088	3567552.26	4722913.21	11-H-37
35139	16227004610000	62268	3538074.09	4708931.01	14-G-37
35370	16227002150000	55333	3555902.40	4734583.11	24-H-38
36020	16227025420000	57832	3562810.77	4712616.76	18-H-37
36251	16085002100000	59722	3648443.01	4723157.09	21-K-37
36373	16085000930000	62470	3644126.76	4714602.71	3-J-37
36411	16061005200000	62493	3575330.82	4749970.94	10-H-38
36701	16227008020000	62534	3537264.38	4686933.40	14-G-36
37056	16227008980000	56351	3462522.89	4717613.45	2-D-37
37057	16227008520000	55954	3466208.93	4722969.13	21-E-37
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
37064	16227013080000	56013	3492749.53	4757375.28	4-E-39
37649	16227029120000	62717	3526430.45	4711046.18	24-G-37
37651	16227029130000	62734	3556931.38	4713986.27	23-H-37
37710	16227016100000	56097	3551207.67	4724102.66	1-G-37
37719	16227015710000	56961	3549647.64	4721371.32	2-G-37
37826	16227023120000	62767	3560023.08	4679636.33	25-H-36
38267	N/A	55729	3539087.22	4730123.52	15-G-38
38274	16227015480000	56372	3545383.00	4733197.37	7-G-38
38322	16085000940000	62973	3647192.03	4726053.60	21-K-37
38426	16009005960000	57776	3497291.82	4862512.32	23-F-43
38932	16227005240000	63318	3569876.74	4705262.11	15-H-37
41548	16085000950000	63409	3642304.41	4725958.82	1-J-37
41592	16061000290000	63410	3640508.47	4725366.02	1-J-37
41615	16227005280000	63415	3566441.36	4736524.93	17-H-38
41696	16227023610000	63452	3495028.97	4756639.38	24-F-39
41697	16227023600000	63451	3494319.81	4758132.90	24-F-39

41725	16227027680000	59798	3468616.76	4716269.14	23-E-37
41810	16227005370000	63560	3472888.17	4707397.84	17-E-37
41947	16227027740000	51817	3481786.65	4761684.03	8-E-39
42211	16227014380000	59583	3563991.43	4746364.30	20-H-38
42252	16227015640000	58373	3481004.91	4758589.66	14-E-39
42524	16227023800000	63881	3487024.18	4758465.02	7-E-39
43185	16003005510000	64157	3471667.88	4808442.76	17-E-41
43186	16003005520000	64156	3470760.65	4807698.98	17-E-41
43551	16031000970000	64272	3635477.79	4712226.76	7-J-37
43567	16061000320000	64273	3640342.27	4714053.90	3-J-37
43875	16141003180000	64373	3425911.18	4539264.83	7-C-30
43976	16061000330000	64401	3547152.27	4815017.01	9-G-41
43985	16099006310000	58419	3612197.32	4840782.31	2-I-42
44002	16099003770000	64470	3591362.01	4865640.57	19-I-43
44194	16141003080000	64546	3510977.34	4557811.88	15-F-31
44391	16061004460000	64617	3561429.05	4779748.41	16-H-40
44511	16031001110000	59426	3620173.84	4611561.20	24-J-33
44554	16003005090000	58960	3449329.98	4792808.59	12-D-40
44735	16227016750000	56662	3569621.28	4727247.67	15-H-38
44743	16213002390000	54263	3408450.80	4716657.54	22-C-37
44795	16227034440000	57636	3551401.40	4715481.58	3-G-37
44796	16227001100000	56757	3539231.22	4723714.58	11-G-37
44820	16227036510000	55633	3566686.67	4740996.80	13-H-38
44831	16213003840000	58605	3437344.22	4696341.88	22-D-36
44884	16227014070000	57261	3536729.75	4699912.65	11-G-36
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
44890	16227033250000	55632	3529142.71	4679249.85	25-G-36
44938	16227015620000	58193	3491722.16	4745622.91	2-E-38
44942	16227015320000	54470	3488970.83	4744555.07	2-E-38
44957	16227014160000	56109	3522545.94	4748689.37	1-F-38
44962	16227035140000	60042	3577956.50	4696909.64	9-H-36
44964	16227034940000	58924	3575369.47	4721780.53	9-H-37
44966	16227003170000	60143	3481167.35	4748430.27	11-E-38
45406	16227037010000	65012	3504763.40	4689387.14	18-F-36
45408	16227026450000	65021	3560616.00	4725343.32	21-H-37
45607	16227023990000	65096	3581237.34	4699876.34	1-H-36
45907	16227007750000	65180	3507309.68	4672384.11	12-F-35
46168	16031002800000	65267	3637429.31	4710551.97	7-J-37
46193	16061000640000	65268	3637516.32	4713532.07	8-J-37
46768	16061000630000	65467	3635237.91	4714834.60	8-J-37
46770	16141000650000	65479	3497085.96	4657113.27	25-F-35
46810	16227007780000	65460	3498285.60	4694145.87	22-F-36

47882	16003008340000	65885	3430189.78	4809872.19	3-C-41
47936	16031002810000	66076	3640930.62	4709111.73	4-J-37
48080	N/A	N/A	3622935.92	4580214.75	20-J-31
48511	16227006200000	66370	3509528.25	4689354.94	13-F-36
48678	16227006280000	66456	3542596.53	4811774.78	8-G-41
48712	16227006310000	66502	3508038.93	4676901.39	11-F-35
48915	16227006370000	66665	3570994.80	4715629.43	13-H-37
49185	16227030620000	58602	3524118.97	4699195.32	1-F-36
49529	16227006520000	66825	3493524.81	4695004.10	2-E-36
50331	16227013630000	57336	3564421.70	4704589.01	16-H-37
50333	16227013650000	58293	3565111.05	4705314.53	16-H-37
50439	16009002300000	67206	3570527.80	4840964.47	12-H-42
50832	16009017270000	67242	3549552.61	4852529.02	5-G-43
50878	16009013530000	67315	3452681.44	4847096.12	10-D-42
51143	16009013620000	67414	3485283.85	4858417.15	8-E-43
51478	16061000370000	67448	3633799.06	4717321.77	8-J-37
51636	16227024940000	67554	3528438.12	4689507.25	23-G-36
53626	16227006990000	67960	3480563.45	4705607.23	15-E-37
53903	16227033810000	68033	3524389.06	4687245.78	4-F-36
54301	16183043590000	15222	3678570.32	4605962.62	21-L-32
54921	16085004180000	39991	3665068.48	4806588.39	7-K-41
55626	16227026690000	68317	3520827.94	4700146.69	1-F-36
57212	16085002060000	26555	3673575.57	4740485.05	3-K-38
57253	16227020520000	58136	3515711.78	4684153.88	7-F-36
57369	16085003120000	68610	3655903.04	4794671.78	19-K-40
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
57470	16227029850000	68623	3525184.89	4661777.14	24-G-35
57726	16061005260000	59905	3559039.72	4773025.08	21-H-39
57764	16009014900000	68852	3539672.74	4820601.83	11-G-41
58703	16003008860000	69173	3422988.72	4816058.06	9-C-41
59328	16141001920000	69443	3492958.77	4553576.66	1-E-30
60392	16085001500000	69744	3671493.20	4745582.38	2-K-38
60463	16003016700000	69768	3418770.84	4734520.66	14-C-38
60620	16177028570000	69834	3557625.31	4569473.46	23-H-31
60647	16227010020000	69877	3512309.91	4688018.79	13-F-36
60784	16031005380000	69932	3639541.16	4644577.82	8-J-34
61104	16227020380000	56905	3491973.42	4728804.98	5-E-38
61708	16009019250000	70131	3439616.99	4842348.54	19-D-42
61894	16177009250000	70199	3567372.90	4545537.00	18-H-30
61911	16009021240000	70177	3511489.71	4857623.20	14-F-43
64431	16009005890000	70784	3545787.87	4827192.40	6-G-42
64550	16227034310000	70852	3585774.48	4701290.57	21-I-36

64561	N/A	N/A	3578480.21	4827164.07	5-H-42
64699	16227027310000	70898	3558040.19	4686822.15	24-H-36
65374	16227010990000	71108	3579130.43	4680677.37	6-H-36
66140	16099001280000	71292	3599230.68	4865452.09	12-I-43
66243	16227032760000	71401	3509916.84	4786399.95	13-F-40
66398	16227011310000	71485	3544385.95	4705990.80	6-G-37
66515	16227026490000	52669	3572425.68	4729207.37	15-H-38
67124	16009021540000	71814	3496141.07	4821638.11	21-F-41
67275	16227011670000	71876	3553323.70	4702158.75	1-G-36
68018	16227027360000	72092	3552777.79	4683804.30	4-G-36
69043	16061000490000	72529	3572634.37	4767185.72	9-H-39
69391	16227003090000	60126	3552748.65	4739554.32	3-G-38
70030	16227012390000	72901	3547509.82	4710409.04	7-G-37
70521	16227012530000	73138	3486419.70	4686297.04	7-E-36
70700	16227029540000	57733	3534220.85	4672619.58	19-G-35
71650	16227012740000	73500	3573687.68	4713970.68	8-H-37
72123	16227033940000	73625	3576867.67	4716408.58	8-H-37
74160	16227017630000	73962	3490079.52	4688678.20	3-E-36
75341	16009020290000	74236	3493198.79	4799775.38	5-E-41
75437	16227031740000	74250	3567016.62	4716229.09	13-H-37
76317	16227032430000	74358	3536578.38	4746352.00	11-G-38
76798	16227000300000	74402	3540035.74	4751298.94	15-G-39
77043	16227032190000	74419	3530358.88	4702133.54	21-G-36
77871	16227000510000	74508	3524832.56	4737001.11	23-G-38
77995	16227028580000	74533	3545058.02	4682921.37	6-G-36
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
78566	16227036120000	74586	3500955.36	4735888.90	17-F-38
78573	16227036290000	74592	3559803.12	4669161.87	22-H-35
79583	16227001180000	74707	3547145.13	4687718.43	7-G-36
80622	16227001990000	75038	3535996.01	4694997.57	19-G-36
80871	16227002400000	75107	3547892.60	4761494.90	8-G-39
81073	16227002640000	75151	3540898.45	4759053.53	14-G-39
81187	16227002670000	75159	3520820.01	4761429.39	3-F-39
81188	16227002660000	75158	3520829.52	4759814.52	4-F-39
81454	16227002910000	56962	3547323.52	4736804.42	8-G-38
81821	16227002980000	75370	3548990.89	4761786.46	3-G-39
82547	16009021840000	35005	3501938.08	4843841.73	20-F-42
82646	16003011180000	75644	3450819.68	4765781.69	12-D-39
82869	16141002110000	75740	3520817.63	4641427.21	3-F-34
82961	16003016260000	75761	3428881.16	4793778.28	2-C-40
83200	16227029050000	75822	3568283.91	4747577.03	11-H-38
83643	16227029270000	76068	3569932.58	4744417.76	12-H-38

84897	16227029680000	76361	3561944.85	4689825.52	18-H-36
85857	16227008470000	76495	3541177.35	4716134.53	13-G-37
85898	N/A	53818	3571740.89	4734211.54	14-H-38
86110	16003009670000	76562	3423619.10	4812830.56	8-C-41
86659	16227029880000	76644	3540207.03	4737195.82	13-G-38
87133	16227029990000	76719	3539072.42	4741123.11	13-G-38
87342	16009022170000	5479	3573997.26	4850656.27	6-H-43
87691	16227030060000	76855	3567821.94	4734254.44	14-H-38
88126	16031001770000	77098	3613357.62	4680114.09	5-I-36
88310	16227030210000	77210	3470169.04	4758345.33	17-E-39
88519	N/A	77346	3411610.64	4696325.52	19-C-36
88720	16031005660000	77443	3560622.09	4645073.00	22-H-34
88824	16031001870000	77544	3563385.67	4626618.05	20-H-33
89627	16227012970000	30669	3525470.61	4678497.25	25-G-36
89864	16031013530000	N18428	3553560.66	4581646.57	5-G-32
89887	16031007420000	5145WF	3609573.22	4620499.34	9-I-33
89889	16031009750000	5801WF	3606721.06	4623540.93	9-I-33
90181	16227013380000	78262	3561394.11	4752493.22	16-H-39
91075	16031002260000	78484	3586086.17	4615272.20	24-I-33
92068	16213002040000	77346	3411610.64	4696325.52	19-C-36
92622	16227015040000	78899	3507994.85	4775339.79	15-F-40
93190	16009017720000	31728	3513217.39	4815982.91	9-F-41
93217	16099001910000	79084	3585459.25	4839430.52	22-I-42
100378	16227015370000	79330	3566632.44	4731296.40	16-H-38
101078	16227016320000	79846	3507125.87	4767864.57	12-F-39
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
101580	16099002750000	80252	3615250.26	4846834.11	21-J-42
101593	16061006730000	24157	3623400.48	4720158.83	19-J-37
101596	16061006670000	1332	3630142.13	4791753.22	12-J-40
101599	16061000410000	33389	3634511.09	4735148.77	7-J-38
101654	16003004610000	48697	3489424.13	4782093.77	4-E-40
101660	16093001190000	26251	3704797.65	4850971.28	5-L-43
101732	16227033780000	2768	3483102.32	4713243.04	8-E-37
101733	16227035900000	15257	3516733.25	4676079.29	10-F-35
102191	16227030660000	80634	3512941.83	4756318.39	7-F-39
102215	16227016740000	80657	3494570.54	4752283.85	25-F-39
102491	16227030670000	80900	3571961.84	4686941.86	14-H-36
102827	16031004400000	81179	3600221.39	4639572.97	14-I-34
103416	16061000830000	81746	3554618.50	4810574.68	23-H-41
103481	16099004420000	81799	3637391.62	4851701.09	6-J-43
103599	16141001080000	81878	3513441.30	4589119.77	14-F-32
104457	16061000860000	82434	3561166.42	4818383.49	19-H-41

104458	16061000870000	82435	3556243.79	4814263.16	23-H-41
104459	16061000880000	82436	3567693.50	4813548.41	13-H-41
104629	16031004440000	82572	3600221.39	4639572.97	14-I-34
105693	16227017700000	83321	3486849.50	4679451.67	6-E-36
105694	16227017710000	83322	3473326.19	4686954.32	17-E-36
106588	16009010050000	83786	3462334.56	4856438.85	4-D-43
107711	16141001170000	84525	3438555.21	4546649.95	22-D-30
107951	16031004590000	84678	3553774.85	4632388.60	5-G-34
108682	16061001060000	85071	3568037.26	4758384.67	14-H-39
108819	16061001100000	85150	3563076.69	4756179.48	17-H-39
109059	16061001370000	85359	3569197.25	4761721.37	13-H-39
109085	16061001400000	85376	3563310.28	4775757.76	16-H-40
109279	16031004680000	85528	3554014.92	4628628.43	1-G-33
109338	16061001540000	85583	3573675.01	4770635.38	9-H-39
109440	16061001660000	85647	3572797.63	4761412.62	8-H-39
109472	16061001730000	85678	3572635.03	4761881.90	8-H-39
109556	16061001820000	85756	3584223.72	4750077.12	1-H-38
109750	16061001860000	85835	3578532.99	4765404.70	8-H-39
109818	16183022610000	85868	3671887.60	4546122.70	3-K-30
110720	16099003370000	86222	3637191.27	4851875.65	6-J-43
110810	16061001940000	86266	3567480.36	4764620.97	13-H-39
110873	16061001950000	86307	3588886.79	4788763.63	23-I-40
111111	16031004730000	86365	3561822.77	4625950.98	20-H-33
111317	16061001990000	86436	3594004.97	4782788.14	17-I-40
111535	16141001190000	86551	3517963.68	4641773.57	8-F-34
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
111582	16061002270000	86581	3583828.88	4784562.39	4-H-40
111583	16061002290000	86582	3578687.64	4777330.88	5-H-40
111698	16061002620000	86676	3580354.08	4789911.95	3-H-40
111711	16141001260000	86681	3510750.29	4623319.12	12-F-33
111826	16061003000000	86770	3573416.75	4796006.68	10-H-40
111833	16061003030000	86777	3584226.90	4775281.00	1-H-39
111866	16141001280000	86779	3515228.29	4553179.28	10-F-30
112219	16227018370000	87013	3575503.50	4705496.43	6-H-37
112229	16031004760000	87024	3565329.24	4598966.65	19-H-32
112277	16061003710000	87056	3591647.69	4784521.61	17-I-40
112288	16141001340000	87067	3510222.74	4542689.85	13-F-30
112435	16061003860000	87128	3610993.78	4821171.57	1-I-41
112764	16061004980000	87310	3570857.65	4800233.82	15-H-41
113002	16061005060000	87433	3614728.03	4822377.65	1-I-41
113076	16031005410000	87479	3555752.54	4630737.11	25-H-34
113543	16099004190000	87541	3627916.36	4847228.07	11-J-42

113949	16061005530000	87887	3627998.62	4801600.77	15-J-41
114144	16061005600000	88073	3631070.09	4807941.27	14-J-41
114292	16031006020000	88207	3640555.26	4705958.71	5-J-37
114341	16085003270000	88256	3659278.58	4822277.11	11-K-41
114661	16183027780000	88552	3676510.11	4608128.31	5-K-33
115223	16061005710000	89089	3626236.98	4804292.10	16-J-41
115312	16085003390000	89178	3656325.63	4776128.52	16-K-40
115429	16227031220000	89254	3584757.03	4694868.36	2-H-36
120335	16009018870000	90366	3526225.86	4858067.09	23-G-43
120748	16061005760000	90748	3621567.60	4804451.78	16-J-41
121349	16099004930000	91400	3658893.12	4838955.05	12-K-42
121595	16061005790000	91514	3611427.22	4766993.68	2-I-39
122123	16099005160000	92049	3662232.27	4832402.94	14-K-42
123053	16099005370000	92484	3614517.68	4864694.68	2-I-43
123336	16099005400000	92592	3597829.75	4843665.53	11-I-42
123654	16031006220000	92916	3646951.67	4708838.70	24-K-37
123757	16061005830000	93054	3632764.08	4724801.63	11-J-37
124339	16031006260000	93653	3633914.42	4708826.21	7-J-37
124491	16031006690000	93760	3630737.78	4711503.10	14-J-37
124493	16031006730000	93846	3622454.49	4713006.46	18-J-37
124522	16061006010000	93729	3638376.71	4729838.19	6-J-38
124524	16061006030000	93761	3628585.58	4718002.38	12-J-37
124638	16031006780000	93970	3648386.48	4704440.44	25-K-37
125043	16061006130000	94318	3570244.30	4796551.73	11-H-40
125506	16061007070000	94361	3568740.22	4819956.77	11-H-41
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
125635	16061007220000	94522	3555704.59	4806697.13	24-H-41
125769	16061007240000	94647	3562534.14	4799556.36	20-H-40
126005	16061007270000	94705	3566777.33	4795177.50	11-H-40
126648	16061007310000	95374	3563270.80	4814720.57	19-H-41
126649	16061007320000	95373	3579075.77	4800370.65	5-H-41
126650	16061007330000	95408	3565693.30	4786570.28	18-H-40
126810	16061007360000	95529	3560902.53	4827903.89	16-H-42
127044	16061007440000	95737	3563950.80	4804503.01	16-H-41
127048	16061007460000	95741	3560986.62	4810710.74	18-H-41
127228	16031011050000	96008	3654918.79	4679155.43	16-K-36
127229	16031011060000	96006	3640719.13	4662067.60	4-J-35
127242	16061007540000	95966	3566464.40	4820190.24	11-H-41
127243	16061007550000	95965	3573626.20	4805304.84	7-H-41
127304	16183044700000	96007	3657549.09	4642506.68	18-K-34
128673	16183045770000	97343	3703997.39	4553842.06	1-L-30
128777	16085004860000	97495	3672234.37	4707777.76	5-K-37

129065	16031011230000	97840	3638621.28	4700218.58	10-J-36
129425	16183045930000	98074	3698310.51	4576031.05	9-L-31
129907	16183046270000	98504	3671406.03	4666380.28	3-K-35
129908	16183046280000	98539	3666925.87	4665023.75	8-K-35
129973	16183046320000	98660	3675315.56	4654827.58	1-K-34
130060	16183046340000	98687	3683889.66	4660861.31	17-L-35
130135	16085004920000	98821	3661407.14	4753110.26	15-K-39
131875	16227040460000	100147	3541655.27	4780117.27	15-G-40
132142	16177046800000	100556	3586907.14	4561236.48	25-I-31
132143	16177046810000	100557	3589506.28	4561320.75	25-I-31
132325	16227040630000	100755	3552476.92	4779111.87	5-G-40
132326	16227040640000	100756	3548693.74	4787115.98	3-G-40
132327	16227040650000	100795	3547045.88	4773329.24	10-G-39
132433	16177046970000	100901	3584963.13	4555903.37	1-H-30
133831	16227041150000	101889	3509024.70	4763712.15	13-F-39
134591	16227041370000	102655	3530330.20	4702122.21	21-G-36
134670	16031012240000	102811	3577761.43	4660476.62	7-H-35
135644	16061007940000	103447	3568904.42	4806248.45	14-H-41
135647	16061007970000	103528	3580655.63	4793191.79	2-H-40
136312	16227041920000	104107	3537731.73	4679909.89	15-G-36
136624	16227042000000	104302	3477848.86	4699740.85	11-E-36
136630	16177047570000	104378	3597224.67	4532911.07	16-I-30
136631	16177047580000	104379	3591694.80	4532841.04	25-I-30
137175	16031012610000	105024	3572912.43	4666423.86	13-H-35
137356	16227042460000	105110	3551119.29	4691601.66	3-G-36
KGS REC	KY_API_#	PERMIT	KYSP1z_N	KYSP1z_E	CARTER
137575	16227042520000	105273	3468842.77	4676370.42	21-E-35
137576	16227042530000	105274	3468044.43	4680150.28	25-E-36
138273	16227042720000	105955	3560594.46	4676086.23	21-H-35
138396	16227042740000	106048	3555866.96	4674199.84	21-H-35
138644	16031012750000	106270	3588683.46	4643126.02	23-I-34
139171	16031012790000	106721	3589691.81	4642798.37	23-I-34
141283	16227043460000	108079	3579875.96	4704707.29	5-H-37
141285	16227043510000	108105	3563328.88	4697666.10	19-H-36
143084	16177049680000	109469	3587094.18	4554215.31	21-I-30
2000111	16003012120000	20333	3417758.61	4790595.15	12-C-40
2029993	16177045790000	4935WF	3560361.27	4533015.01	25-H-30
2030235	16171015050000	31202	3414206.40	4862813.92	19-C-43
2037542	16213003030000	24037	3430596.56	4640273.86	3-C-34
2037613	16213001200000	31058	3403918.69	4676861.06	25-C-36
2037770	N/A	N/A	3464080.29	4653131.39	5-D-35
2039921	16227035550000	31176	3473295.90	4765510.33	19-E-39

2040109	16227012920000	33896	3506107.51	4684964.55	17-F-36
2040429	16227014860000	36004	3506388.44	4800344.11	15-F-41
2040433	16227038650000	27320	3554497.53	4665095.07	3-G-35
2040888	16227036340000	31224	3589109.48	4685012.86	24-I-36
2042187	16227012930000	32485	3538020.51	4801635.91	15-G-41

KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
1360	ALLEN	570.00	GR	2075.00	D&A	GRD
1561	ALLEN	607.00	GR	500.00	D&A	GRD
1612	ALLEN	570.00	GR	447.00	OIL	GRD
1647	ALLEN	637.00	GR	2180.00	D&A	GRN
1677	ALLEN	680.00	GR	2190.00	D&A	FDC
2089	BARREN	695.00	GR	573.00	OIL	GRN
2182	BARREN	704.00	GR	2274.00	D&A	GRN
2183	BARREN	667.00	GR	900.00	D&A	GRN
2619	BUTLER	491.00	GR	3735.00	D&A	FDC
2626	BUTLER	484.00	GR	2500.00	D&A	DIL
2627	BUTLER	408.00	GR	5711.00	D&A	GRD
2628	BUTLER	424.00	GR	3465.00	D&A	FDC
2631	BUTLER	682.00	GR	4460.00	D&A	GR
8245	EDMONSON	643.00	GR	602.00	D&A	GRD
8247	EDMONSON	665.00	GR	657.00	OIL	GRD
8249	EDMONSON	578.00	GR	3131.00	D&A	GR
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
8254	EDMONSON	608.00	GR	1387.00	GAS	FDC
8255	EDMONSON	515.00	GR	1265.00	D&A	FDC
8268	EDMONSON	760.00	GR	1582.00	SWD	FDC
8288	EDMONSON	521.00	GR	1640.00	GAS	GRD
8840	GRAYSON	582.00	GR	1602.00	GAS	GRD
8852	GRAYSON	582.00	GR	1667.00	GAS	GRD
8853	GRAYSON	566.00	GR	1671.00	GAS	GR
8856	GRAYSON	738.00	GR	1903.00	D&A	GRD
8870	GRAYSON	742.00	GR	1907.00	GAS	GRD
8884	GRAYSON	747.00	GR	1950.00	GAS	FDC
8922	GRAYSON	543.00	GR	1461.00	GAS	GRD
8929	GRAYSON	700.00	GR	1678.00	GAS	GRD
8931	GRAYSON	710.00	GR	1671.00	GAS	GRD
8942	GRAYSON	665.00	GR	1672.00	GAS	GRD
8949	GRAYSON	700.00	GR	1732.00	GAS	GRD
8950	GRAYSON	706.00	GR	1714.00	GAS	GRD
8966	GRAYSON	730.00	GR	3910.00	D&A	GRD

8970	GRAYSON	602.00	GR	1611.00	D&A	GRN
8974	GRAYSON	692.30	GR	13551.00	D&A	BHCS
8979	GRAYSON	585.00	GR	2500.00	D&A	FDC
8985	GRAYSON	654.00	GR	2482.00	D&A	GRD
9892	HARDIN	615.00	GR	2173.00	D&A	GRD
9948	HART	521.00	GR	885.00	OIL	GRN
10018	HART	590.00	GR	1306.00	OIL	GRD
10037	HART	640.00	GR	3128.00	D&A	GR
12499	LOGAN	529.00	GR	1300.00	D&A	GRN
12520	LOGAN	625.00	GR	3613.00	D&A	GRD
12534	LOGAN	686.00	GR	1297.00	D&A	
12535	LOGAN	642.00	GR	1086.00	D&A	
12557	LOGAN	655.00	GR	1035.00	D&A	
12581	LOGAN	628.00	GR	1395.00	D&A	DIL
12585	LOGAN	581.00	GR	1366.00	D&A	FDC
12588	LOGAN	716.00	GR	1490.00	D&A	GRD
12589	LOGAN	727.00	GR	1491.00	GAS	GRD
12611	LOGAN	754.00	GR	2316.00	D&A	SPR
12623	LOGAN	484.00	GR	1905.00	D&A	
12632	LOGAN	492.00	GR	2400.00	D&A	SPR
12659	LOGAN	688.00	GR	1581.00	OIL	DEN
16942	SIMPSON	688.00	GR	1000.00	D&A	
16946	SIMPSON	658.00	GR	3672.00	D&A	SPR
16951	SIMPSON	638.00	GR	620.00	D&A	GRD
17423	WARREN	482.00	GR	428.00	D&A	GRD
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
17428	WARREN	542.00	GR	1540.00	D&A	GRD
17448	WARREN	579.00	GR	1045.00	OIL	GRD
17470	WARREN	485.00	GR	4018.00	D&A	BHCS
17473	WARREN	540.00	GR	3959.00	D&A	BHCS
17494	WARREN	633.00	GR	1600.00	D&A	FDC
17496	WARREN	639.00	GR	1540.00	D&A	GRD
17550	WARREN	470.00	GR	1073.00	D&A	FDC
17582	WARREN	650.00	GR	666.00	OIL	GRD
17588	WARREN	412.00	GR	1948.00	D&A	FDC
17592	WARREN	603.00	GR	1632.00	D&A	FDC
17660	WARREN	602.00	GR	1375.00	OIL	GRD
17687	WARREN	608.00	GR	1605.00	OIL	GRD
18752	MUHLENBERG	500.00	GR	3752.00	SRI	SPR
21277	ALLEN	804.00	GR	352.00	D&A	GRD
21322	BARREN	769.00	GR	532.00	OIL	GRD
22861	HART	575.00	GR	1442.00	D&A	FDC

23475	LOGAN	618.00	GR	1455.00	D&A	GRD
23477	LOGAN	688.00	GR	1627.00	D&A	FDC
24414	SIMPSON	576.00	GR	515.00	D&A	GRD
24513	WARREN	626.00	GR	1031.00	GAS	DEN
24518	WARREN	570.00	GR	723.00	DG	GRD
24520	WARREN	605.00	GR	455.00	OIL	GRD
24533	WARREN	632.00	GR	1506.00	OB	GRD
24862	WARREN	679.00	GR	1325.00	OIL	GRD
24878	ALLEN	580.00	GR	2135.00	OIL	LDT
24985	EDMONSON	645.00	GR	1326.00	OIL	GRD
24987	EDMONSON	642.00	GR	1326.00	D&A	GRD
25006	WARREN	658.00	GR	1404.00	D&A	GRD
25007	WARREN	663.00	GR	468.00	D&A	GRD
25065	ALLEN	630.00	GR	402.00	OIL	GRD
25165	OHIO	600.00	GR	3390.00	GAS	FDC
26194	BARREN	690.00	GR	551.00	D&A	GRD
26231	EDMONSON	480.00	GR	1704.00	GAS	FDC
26540	BUTLER	438.00	GR	1715.00	D&A	FDC
26541	BUTLER	406.00	GR	1790.00	D&A	RAT
26542	BUTLER	610.00	GR	1918.00	D&A	FDC
26543	BUTLER	656.00	GR	1935.00	D&A	GRD
26544	BUTLER	660.00	GR	1922.00	D&A	GRN
26549	WARREN	640.00	GR	735.00	GAS	GRD
26609	WARREN	562.00	GR	1043.00	OIL	GRD
26970	WARREN	520.00	GR	1335.00	OIL	CLPR
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
27009	GRAYSON	554.00	GR	1765.00	GAS	FDC
27145	WARREN	608.00	GR	1230.00	OIL	GRD
27146	WARREN	605.00	GR	1429.00	OIL	FDC
27367	WARREN	580.00	GR	1550.00	GAS	FDC
27852	SIMPSON	612.00	GR	848.00	D&A	
28285	WARREN	661.00	GR	1425.00	D&A	GRD
28442	GRAYSON	680.00	GR	1645.00	GAS	FDC
28447	GRAYSON	689.00	GR	1688.00	GAS	FDC
28458	GRAYSON	520.00	GR	1482.00	GAS	FDC
28470	GRAYSON	730.00	GR	1762.00	D&A	GRD
29044	WARREN	499.00	GR	1275.00	OIL	GRD
29071	WARREN	673.00	GR	1480.00	OIL	GRD
29102	WARREN	590.00	GR	1454.00	OIL	GRD
30067	EDMONSON	665.00	GR	2424.00	D&A	GRD
30090	EDMONSON	479.00	GR	1706.00	GAS	BC
30092	WARREN	601.00	GR	1135.00	OIL	GRD

30117	WARREN	500.00	GR	852.00	OIL	GRD
30118	LOGAN	602.00	GR	1150.00	D&A	GRD
30483	WARREN	632.00	GR	565.00	OIL	GRD
30670	WARREN	545.00	GR	1490.00	D&A	GRD
30794	GRAYSON	755.00	GR	1950.00	GAS	BC
30795	GRAYSON	528.00	GR	1740.00	GAS	ENP
30824	BARREN	822.00	GR	603.00	D&A	GRD
31005	ALLEN	712.00	GR	505.00	D&A	GRD
31018	EDMONSON	507.00	GR	1716.00	GAS	ENP
31120	ALLEN	751.00	GR	303.00	OIL	GRD
31264	WARREN	475.00	GR	1480.00	D&A	CLPR
31394	HART	616.00	GR	1955.00	D&A	GRD
32126	WARREN	503.00	GR	1360.00	OIL	GRD
32468	WARREN	600.00	GR	1235.00	OIL	GRD
32641	BARREN	635.00	GR	692.00	D&A	FDC
32959	BARREN	0.00	GR	2770.00	D&A	GRN
33057	WARREN	625.00	GR	2130.00	D&A	FDC
33896	LOGAN	670.00	GR	1531.00	OIL	FDC
34176	EDMONSON	617.00	GR	1313.00	OIL	GRD
34251	WARREN	514.00	GR	1385.00	OIL	GRD
34413	ALLEN	560.00	GR	430.00	OIL	CLPR
34743	WARREN	551.00	GR	1403.00	D&A	GRD
35139	WARREN	448.00	GR	997.00	OIL	GRD
35370	WARREN	757.00	GR	1308.00	OIL	GRD
36020	WARREN	628.00	GR	1300.00	OIL	FDC
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
36251	GRAYSON	521.00	GR	1675.00	GAS	ENP
36373	GRAYSON	515.00	GR	1705.00	GAS	GR
36411	EDMONSON	615.00	GR	1889.00	D&A	CLPR
36701	WARREN	550.00	GR	1276.00	O&G	FDC
37056	WARREN	585.00	GR	866.00	GAS	FDC
37057	WARREN	590.00	GR	900.00	GAS	FDC
37064	WARREN	560.00	GR	975.00	OIL	FDC
37649	WARREN	438.00	GR	1005.00	OIL	GRD
37651	WARREN	537.00	GR	1164.00	OIL	FDC
37710	WARREN	473.00	GR	1034.00	OIL	GRD
37719	WARREN	568.00	GR	1225.00	OIL	GRD
37826	WARREN	422.00	GR	1314.00	D&A	GRD
38267	WARREN	581.00	GR	1028.00	OIL	GRD
38274	WARREN	554.00	GR	1400.00	OIL	GRD
38322	GRAYSON	733.00	GR	1875.00	GAS	FDC
38426	BARREN	688.00	GR	410.00	OIL	GRD

38932	WARREN	545.00	GR	1509.00	OIL	FDC
41548	GRAYSON	540.00	GR	1725.00	GAS	DIL
41592	EDMONSON	502.00	GR	1703.00	GAS	CLPR
41615	WARREN	647.00	GR	1291.00	OIL	GRD
41696	WARREN	584.00	GR	780.00	D&A	GRD
41697	WARREN	568.00	GR	725.00	D&A	GRD
41725	WARREN	642.00	GR	909.00	D&A	GRD
41810	WARREN	590.00	GR	1530.00	D&A	FDC
41947	WARREN	589.00	GR	500.00	D&A	GRD
42211	WARREN	626.00	GR	1330.00	D&A	GRD
42252	WARREN	594.00	GR	575.00	GAS	GRD
42524	WARREN	560.00	GR	532.00	D&A	DEN
43185	ALLEN	706.00	GR	380.00	OIL	GRD
43186	ALLEN	636.00	GR	401.00	OIL	GRD
43551	BUTLER	705.00	GR	1975.00	GAS	GRD
43567	EDMONSON	649.00	GR	1854.00	GAS	DIL
43875	LOGAN	607.00	GR	1225.00	D&A	GRD
43976	EDMONSON	615.00	GR	522.00	OIL	GRD
43985	HART	658.00	GR	1025.00	D&A	GRD
44002	HART	618.00	GR	1000.00	D&A	GRD
44194	LOGAN	510.00	GR	2885.00	D&A	DIFL
44391	EDMONSON	740.00	GR	2929.00	D&A	FDC
44511	BUTLER	432.00	GR	3505.00	D&A	CLPR
44554	ALLEN	749.00	GR	423.00	OIL	GRD
44735	WARREN	596.00	GR	1406.00	DG	CLPR
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
44743	SIMPSON	728.00	GR	630.00	D&A	GRD
44795	WARREN	436.00	GR	3111.00	D&A	GRD
44796	WARREN	491.00	GR	903.00	OIL	GRD
44820	WARREN	670.00	GR	1350.00	OIL	GRD
44831	SIMPSON	662.00	GR	626.00	OIL	GRD
44884	WARREN	426.00	GR	1068.00	OIL	FDC
44890	WARREN	710.00	GR	1410.00	D&A	GRD
44938	WARREN	600.00	GR	706.00	OIL	GRD
44942	WARREN	601.00	GR	575.00	OIL	GRD
44957	WARREN	535.00	GR	800.00	D&A	GRN
44962	WARREN	708.00	GR	2145.00	D&A	FDC
44964	WARREN	585.00	GR	1478.00	D&A	FDC
44966	WARREN	590.00	GR	650.00	D&A	FDC
45406	WARREN	682.00	GR	1260.00	D&A	GRD
45408	WARREN	570.00	GR	1223.00	D&A	FDC
45607	WARREN	706.00	GR	1829.00	D&A	FDC

45907	WARREN	578.00	GR	1155.00	OIL	GRD
46168	BUTLER	707.00	GR	1955.00	GAS	DIL
46193	EDMONSON	509.00	GR	1740.00	GAS	GR
46768	EDMONSON	707.00	GR	1980.00	GAS	DIL
46770	LOGAN	636.00	GR	1306.00	OIL	GRD
46810	WARREN	595.00	GR	998.00	OIL	GRD
47882	ALLEN	804.00	GR	442.00	D&A	GRD
47936	BUTLER	720.00	GR	1980.00	GAS	DIL
48080	OHIO	454.00	GR	3947.00	D&A	SPR
48511	WARREN	790.00	GR	1320.00	OIL	GRD
48678	WARREN	615.00	GR	917.00	OIL	GRD
48712	WARREN	550.00	GR	1060.00	OIL	GRD
48915	WARREN	473.00	GR	1315.00	OIL	FDC
49185	WARREN	508.00	GR	1017.00	OIL	GRD
49529	WARREN	590.00	GR	969.00	OIL	GRD
50331	WARREN	652.00	GR	1365.00	GAS	GRD
50333	WARREN	630.00	GR	1850.00	GAS	GRD
50439	BARREN	800.00	GR	1328.00	GAS	GRD
50832	BARREN	773.00	GR	997.00	OIL	GRD
50878	BARREN	747.00	GR	1856.00	D&A	FDC
51143	BARREN	660.00	GR	452.00	D&A	CLPR
51478	EDMONSON	520.00	GR	1775.00	GAS	BC
51636	WARREN	594.00	GR	1250.00	D&A	GRD
53626	WARREN	614.00	GR	1000.00	D&A	FDC
53903	WARREN	650.00	GR	1237.00	OIL	FDC
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
54301	OHIO	410.00	GR	2712.00	D&A	GRN
54921	GRAYSON	688.00	GR	1414.00	LOC	
55626	WARREN	492.00	GR	1003.00	D&A	FDC
57212	GRAYSON	667.00	GR	2320.00	OIL	GRD
57253	WARREN	740.00	GR	1646.00	D&A	GRD
57369	GRAYSON	749.00	GR	2305.00	D&A	FDC
57470	WARREN	663.00	GR	1450.00	OIL	DEN
57726	EDMONSON	693.00	GR	1557.00	D&A	GRD
57764	BARREN	657.00	GR	850.00	D&A	FDC
58703	ALLEN	782.00	GR	380.00	D&A	GRD
59328	LOGAN	629.00	GR	3700.00	D&A	CLPR
60392	GRAYSON	680.00	GR	1650.00	IA	BC
60463	ALLEN	660.00	GR	475.00	D&A	GRD
60620	MUHLENBERG	538.00	GR	2165.00	D&A	FDC
60647	WARREN	773.00	GR	1320.00	OIL	BC
60784	BUTLER	429.00	GR	2545.00	D&A	FDC

61104	WARREN	580.00	GR	699.00	D&A	GRD
61708	BARREN	718.00	GR	1103.00	D&A	DIL
61894	MUHLENBERG	556.00	GR	3624.00	OIL	FDC
61911	BARREN	675.00	GR	500.00	OIL	DIL
64431	BARREN	699.00	GR	1980.00	D&A	GRD
64550	WARREN	427.00	GR	1475.00	D&A	DIL
64561	EDMONSON	660.00	GR	1156.00	WS	GRD
64699	WARREN	590.00	GR	1557.00	D&A	DIL
65374	WARREN	550.00	GR	1900.00	DG	DIL
66140	HART	660.00	GR	1020.00	DG	FDC
66243	WARREN	599.00	GR	502.00	D&A	GRD
66398	WARREN	461.00	GR	1075.00	OIL	GRD
66515	WARREN	628.00	GR	1555.00	D&A	GRD
67124	BARREN	640.00	GR	453.00	D&A	FDC
67275	WARREN	453.00	GR	1129.00	OIL	CLPR
68018	WARREN	545.00	GR	1375.00	D&A	GRD
69043	EDMONSON	534.00	GR	1291.00	OIL	GR
69391	WARREN	610.00	GR	1176.00	OIL	GRD
70030	WARREN	524.00	GR	1200.00	OIL	CLPR
70521	WARREN	605.00	GR	974.00	OIL	GRD
70700	WARREN	444.00	GR	1378.00	OIL	GRD
71650	WARREN	538.00	GR	1450.00	OIL	DIL
72123	WARREN	544.00	GR	1536.00	D&A	FDC
74160	WARREN	588.00	GR	978.00	OIL	GRD
75341	BARREN	533.00	GR	701.00	D&A	FDC
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
75437	WARREN	546.00	GR	1447.00	OIL	DIL
76317	WARREN	531.00	GR	664.00	D&A	GR
76798	WARREN	538.00	GR	753.00	GAS	FDC
77043	WARREN	599.00	GR	1140.00	D&A	FDC
77871	WARREN	503.00	GR	600.00	D&A	FDC
77995	WARREN	474.00	GR	1253.00	D&A	GRD
78566	WARREN	558.00	GR	925.00	D&A	FDC
78573	WARREN	579.00	GR	1550.00	D&A	DIL
79583	WARREN	503.00	GR	1210.00	OIL	FDC
80622	WARREN	718.00	GR	1346.00	OIL	FDC
80871	WARREN	576.00	GR	1065.00	GAS	GR
81073	WARREN	576.00	GR	900.00	GAS	FDC
81187	WARREN	546.00	GR	520.00	GAS	FDC
81188	WARREN	554.00	GR	540.00	GAS	FDC
81454	WARREN	608.00	GR	1030.00	OIL	GRD
81821	WARREN	536.00	GR	725.00	GAS	FDC

82547	BARREN	651.00	GR	419.00	D&A	GRD
82646	ALLEN	709.00	GR	398.00	D&A	GRD
82869	LOGAN	646.00	GR	1575.00	OIL	GRD
82961	ALLEN	702.00	GR	223.00	D&A	GRD
83200	WARREN	612.00	GR	1350.00	D&A	CLPR
83643	WARREN	615.00	GR	1318.00	D&A	CLPR
84897	WARREN	580.00	GR	1536.00	D&A	DIL
85857	WARREN	719.00	GR	1252.00	OIL	GRD
85898	WARREN	697.00	GR	1589.00	GAS	DIL
86110	ALLEN	857.00	GR	355.00	D&A	
86659	WARREN	544.00	GR	950.00	D&A	CLPR
87133	WARREN	549.00	GR	910.00	D&A	FDC
87342	BARREN	683.00	GR	800.00	GAS	GRN
87691	WARREN	632.00	GR	1431.00	OIL	FDC
88126	BUTLER	512.00	GR	4470.00	D&A	FDC
88310	WARREN	610.00	GR	550.00	D&A	CLPR
88519	SIMPSON	725.00	GR	825.00	D&A	GRD
88720	BUTLER	518.00	GR	1760.00	D&A	DIL
88824	BUTLER	490.00	GR	1811.00	D&A	DIL
89627	WARREN	528.00	GR	1302.00	GAS	GRD
89864	BUTLER	448.00	GR	2090.00	D&A	
89887	BUTLER	402.00	GR	3050.00	D&A	
89889	BUTLER	396.00	GR	3102.00	D&A	
90181	WARREN	601.00	GR	1318.00	OIL	FDC
91075	BUTLER	429.00	GR	2440.00	GAS	DIL
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
92068	SIMPSON	725.00	GR	1350.00	D&A	
92622	WARREN	557.00	GR	519.00	D&A	CLPR
93190	BARREN	683.00	GR	553.00	OIL	GRD
93217	HART	742.00	GR	1254.00	D&A	GRD
100378	WARREN	631.00	GR	3280.00	D&A	CLPR
101078	WARREN	555.00	GR	546.00	DG	GRD
101580	HART	529.00	GR	904.00	OIL	GRD
101593	EDMONSON	446.00	GR	1847.00	D&A	GR
101596	EDMONSON	520.00	GR	1270.00	D&A	GR
101599	EDMONSON	725.00	GR	1955.00	GAS	DIL
101654	ALLEN	557.00	GR	411.00	OIL	GRD
101660	HARDIN	650.00	GR	978.00	D&A	GRN
101732	WARREN	574.00	GR	806.00	D&A	GRN
101733	WARREN	517.00	GR	1198.00	D&A	GRN
102191	WARREN	539.00	GR	587.00	D&A	GRD
102215	WARREN	562.00	GR	525.00	OIL	CLPR

102491	WARREN	575.00	GR	1704.00	D&A	CLPR
102827	BUTLER	446.00	GR	3998.00	WD	DIL
103416	EDMONSON	621.00	GR	2515.00	D&A	GRD
103481	HART	864.00	GR	1498.00	D&A	CLPR
103599	LOGAN	439.00	GR	1644.00	D&A	CLPR
104457	EDMONSON	566.00	GR	1206.00	D&A	GRD
104458	EDMONSON	986.00	GR	1117.00	D&A	GRD
104459	EDMONSON	798.00	GR	1070.00	D&A	GRD
104629	BUTLER	446.00	GR	6450.00		BC
105693	WARREN	596.00	GR	3000.00	D&A	DIL
105694	WARREN	652.00	GR	2303.00	D&A	DEN
106588	BARREN	728.00	GR	472.00	OIL	GRD
107711	LOGAN	605.00	GR	1400.00	D&A	CLPR
107951	BUTLER	583.00	GR	1930.00	D&A	FDC
108682	EDMONSON	645.00	GR	1422.00	D&A	CLPR
108819	EDMONSON	680.00	GR	1445.00	D&A	DIL
109059	EDMONSON	613.00	GR	3106.00	D&A	CLPR
109085	EDMONSON	635.00	GR	1280.00	D&A	CLPR
109279	BUTLER	542.00	GR	1959.00	D&A	CLPR
109338	EDMONSON	579.00	GR	1292.00	OIL	CLPR
109440	EDMONSON	623.00	GR	1350.00	OIL	GRD
109472	EDMONSON	617.00	GR	1369.00	D&A	FDC
109556	EDMONSON	573.00	GR	1659.00	D&A	CLPR
109750	EDMONSON	577.00	GR	2703.00	OIL	CLPR
109818	OHIO	462.00	GR	4715.00	D&A	DIL
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
110720	HART	862.00	GR	2968.00	D&A	CLPR
110810	EDMONSON	603.00	GR	1346.00	OIL	GRD
110873	EDMONSON	698.00	GR	3210.00	D&A	FDC
111111	BUTLER	635.00	GR	2200.00	D&A	CLPR
111317	EDMONSON	616.00	GR	1497.00	OIL	CLPR
111535	LOGAN	612.00	GR	1750.00	D&A	CLPR
111582	EDMONSON	619.00	GR	1435.00	D&A	CLPR
111583	EDMONSON	590.00	GR	1455.00	D&A	CLPR
111698	EDMONSON	702.00	GR	1510.00	D&A	GRD
111711	LOGAN	678.00	GR	1622.00	OIL	FDC
111826	EDMONSON	701.00	GR	1435.00	D&A	CLPR
111833	EDMONSON	543.00	GR	1368.00	OIL	CLPR
111866	LOGAN	423.00	GR	2060.00	D&A	FDC
112219	WARREN	560.00	GR	2003.00	D&A	GRD
112229	BUTLER	622.00	GR	1897.00	D&A	FDC
112277	EDMONSON	645.00	GR	1345.00	OIL	CLPR

112288	LOGAN	681.00	GR	2041.00	D&A	FDC
112435	EDMONSON	660.00	GR	1477.00	OIL	CLPR
112764	EDMONSON	702.00	GR	2000.00	D&A	FDC
113002	EDMONSON	751.00	GR	1605.00	D&A	FDC
113076	BUTLER	695.00	GR	2066.00	D&A	DIL
113543	HART	893.00	GR	1585.00	D&A	CLPR
113949	EDMONSON	818.00	GR	1830.00	D&A	FDC
114144	EDMONSON	694.00	GR	1550.00	D&A	FDC
114292	BUTLER	682.00	GR	2027.00	GAS	DIL
114341	GRAYSON	713.00	GR	1500.00	OIL	
114661	OHIO	431.00	GR	4500.00	D&A	FDC
115223	EDMONSON	763.00	GR	1500.00	D&A	FDC
115312	GRAYSON	796.00	GR	3500.00	D&A	DIL
115429	WARREN	549.00	GR	1907.00	GAS	FDC
120335	BARREN	667.00	GR	995.00	D&A	GRD
120748	EDMONSON	619.00	GR	1300.00	D&A	GRD
121349	HART	666.00	GR	1354.00	OIL	FDC
121595	EDMONSON	664.00	GR	6514.00	D&A	DIL
122123	HART	676.00	GR	1355.00	OIL	GRD
123053	HART	541.00	GR	840.00	DG	FDC
123336	HART	689.00	GR	1000.00	D&A	GRD
123654	BUTLER	705.00	GR	1985.00	GAS	DIL
123757	EDMONSON	517.00	GR	1862.00	GAS	DIL
124339	BUTLER	738.00	GR	2084.00	GAS	DIL
124491	BUTLER	707.00	GR	2010.00	GAS	DIL
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
124493	BUTLER	615.00	GR	1959.00	GAS	DIL
124522	EDMONSON	730.00	GR	1960.00	GAS	DIL
124524	EDMONSON	500.00	GR	1836.00	GAS	DIL
124638	BUTLER	707.00	GR	1984.00	GAS	DIL
125043	EDMONSON	698.00	GR	3057.00	GAS	BHCS
125506	EDMONSON	853.00	GR	1180.00	OIL	FDC
125635	EDMONSON	622.00	GR	2356.00	GAS	FDC
125769	EDMONSON	768.00	GR	1203.00	GAS	FDC
126005	EDMONSON	659.00	GR	1227.00	GAS	FDC
126648	EDMONSON	588.00	GR	903.00	GAS	FDC
126649	EDMONSON	709.00	GR	1254.00	GAS	FDC
126650	EDMONSON	667.00	GR	1280.00	OIL	FDC
126810	EDMONSON	815.00	GR	1103.00	GAS	FDC
127044	EDMONSON	770.00	GR	1228.00	GAS	FDC
127048	EDMONSON	791.00	GR	1153.00	GAS	FDC
127228	BUTLER	617.00	GR	4613.00	GAS	GR

127229	BUTLER	449.00	GR	2340.00	GAS	BHCS
127242	EDMONSON	643.00	GR	954.00	GAS	FDC
127243	EDMONSON	762.00	GR	1205.00	GAS	FDC
127304	OHIO	627.00	GR	2650.00	GAS	DIL
128673	OHIO	384.00	GR	3481.00	O&G	DEN
128777	GRAYSON	539.00	GR	1710.00	D&A	CLPR
129065	BUTLER	648.00	GR	2075.00	GAS	BC
129425	OHIO	434.00	GR	2847.00	O&G	BC
129907	OHIO	630.00	GR	2260.00	GAS	COMP
129908	OHIO	563.00	GR	2254.00	GAS	DTL
129973	OHIO	588.00	GR	2314.00	GAS	LDT
130060	OHIO	438.00	GR	2045.00	GAS	DTL
130135	GRAYSON	718.00	GR	1695.00	GAS	ECS
131875	WARREN	592.00	GR	1480.00	GAS	FDC
132142	MUHLENBERG	552.00	GR	2927.00	LOC	
132143	MUHLENBERG	502.00	GR	2879.00	LOC	
132325	WARREN	615.00	GR	862.00	GAS	FDC
132326	WARREN	612.00	GR	859.00	GAS	FDC
132327	WARREN	568.00	GR	850.00	O&G	FDC
132433	MUHLENBERG	420.00	GR	5053.00	LOC	
133831	WARREN	446.00	GR	475.00	D&A	GRD
134591	WARREN	594.00	GR	1145.00	OIL	GRD
134670	BUTLER	462.00	GR	2085.00	OB	COMP
135644	EDMONSON	756.00	GR	1307.00	GAS	FDC
135647	EDMONSON	714.00	GR	1409.00	OIL	FDC
KGS REC	COUNTY	ELEV	DATUM	TD	RESULTS	ELOG
136312	WARREN	533.00	GR	1250.00	OIL	FDC
136624	WARREN	580.00	GR	893.00	O&G	FDC
136630	MUHLENBERG	460.00	GR	3902.00	GAS	
136631	MUHLENBERG	434.00	GR	3699.00	GAS	
137175	BUTLER	484.00	GR	1846.00	GAS	FDC
137356	WARREN	608.00	GR	1570.00	OIL	FDC
137575	WARREN	614.00	GR	1000.00	GAS	FDC
137576	WARREN	636.00	GR	1000.00	GAS	FDC
138273	WARREN	566.00	GR	1358.00	GAS	FDC
138396	WARREN	577.00	GR	1465.00	O&G	FDC
138644	BUTLER	557.00	GR	2235.00	GAS	GR
139171	BUTLER	505.00	GR	2254.00	GAS	
141283	WARREN	475.00	GR	1464.00	GAS	
141285	WARREN	586.00	GR	1341.00	GAS	
143084	MUHLENBERG	492.00	GR	3070.00	OIL	
2000111	ALLEN	769.00	GR	330.00	D&A	GRN

2029993	MUHLENBERG	602.00	GR	2589.00	D&A	GR
2030235	MONROE	755.00	GR	340.00	OIL	GRD
2037542	SIMPSON	647.00	GR	850.00	D&A	
2037613	SIMPSON	731.00	GR	625.00	GAS	
2037770	SIMPSON	685.00	GR	1198.00	LOC	
2039921	WARREN	502.00	GR	520.00	LOC	GRD
2040109	WARREN	638.00	GR	1497.00	OIL	FDC
2040429	WARREN	702.00	GR	535.00	OIL	GRD
2040433	WARREN	606.00	GR	1565.00	D&A	GRD
2040888	WARREN	420.00	GR	1888.00	D&A	EPT
2042187	WARREN	630.00	GR	534.00	OIL	GRD

KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
1360	ORD-Knox Gp	N/A	
1561	ORD-Breccia	N/A	
1612	DEV-Corniferous	DEV-Corniferous	2 BOPD
1647	ORD-Knox Gp	N/A	
1677	ORD-Knox Gp	N/A	
2089	ORD-Drakes Fm	SIL-Laurel Dol	2 BOPD
2182	ORD-Knox Gp	N/A	
2183	ORD-Drakes Fm	N/A	
2619	ORD-Knox Gp	N/A	
2626	SIL-Silurian System	N/A	
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
2627	ORD-Roubidoux Fm	N/A	
2628	SIL-Bailey Ls	N/A	
2631	ORD-Knox Gp	N/A	
8245	SIL-Laurel Dol	N/A	
8247	SIL-Laurel Dol	DEV-Corniferous	5 BOPD
8249	ORD-Knox Gp	N/A	
8254	DEV-Sellersburg Ls	DEV-New Albany Sh	30 MCFGPD
8255	MISS-Ft Payne Fm	N/A	
8268	DEV-Sellersburg Ls	PALEO-Paleozoic Era	
8288	DEV-New Albany Sh	DEV-New Albany Sh	0 MCFGPD
8840	DEV-Devonian System	DEV-New Albany Sh	140 MCFGPD
8852	DEV-New Albany Sh	DEV-New Albany Sh	40 MCFGPD
8853	DEV-New Albany Sh	DEV-New Albany Sh	150 MCFGPD
8856	DEV-Sellersburg Ls	N/A	
8870	DEV-Sellersburg Ls	DEV-New Albany Sh	5 MCFGPD
8884	DEV-New Albany Sh	DEV-New Albany Sh	100 MCFGPD

8922	DEV-New Albany Sh	DEV-New Albany Sh	40 MCFGPD
8929	DEV-New Albany Sh	DEV-New Albany Sh	120 MCFGPD
8931	DEV-New Albany Sh	DEV-New Albany Sh	20 MCFGPD
8942	DEV-New Albany Sh	DEV-New Albany Sh	40 MCFGPD
8949	DEV-New Albany Sh	DEV-New Albany Sh	50 MCFGPD
8950	DEV-New Albany Sh	DEV-New Albany Sh	120 MCFGPD
8966	ORD-Rose Run Sd	N/A	
8970	SIL-Decatur Ls	N/A	
8974	CAM-Eau Claire Fm	N/A	
8979	ORD-Breccia	N/A	
8985	ORD-Plattin Ls	N/A	
9892	ORD-Stones River	N/A	
9948	SIL-Laurel Dol	SIL-Laurel Dol	4 BOPD
10018	SIL-Laurel Dol	SIL-Laurel Dol	1 BOPD
10037	ORD-Knox Gp	N/A	
12499	PALEO-Paleozoic Era	N/A	
12520	ORD-Knox Gp	N/A	
12534	DEV System	N/A	
12535	DEV System	N/A	
12557	DEV System	N/A	
12581	SIL-Silurian System	N/A	
12585	SIL- Silurian System	N/A	
12588	SIL- Silurian System	N/A	
12589	SIL- Silurian System	DEV-Devonian System	0 MCFGPD
12611	DEV-Clear Creek Fm	N/A	
12623	DEV-New Albany Sh	N/A	
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
12632	ORD System	N/A	
12659	DEV-Clear Creek Fm	DEV-Clear Creek Fm	20 BOPD
16942	DEV-Jeffersonville Ls	N/A	
16946	CAM-Copper Ridge Dol	N/A	
16951	SIL-Waldron Sh	N/A	
17423	DEV-Corniferous	N/A	
17428	SIL-Osgood Fm	N/A	
17448	SIL-Brownspor Fm	DEV-Clear Creek Fm	0 BOPD
17470	CAM-Copper Ridge Dol	N/A	
17473	CAM-Copper Ridge Dol	N/A	
17494	DEV-Corniferous	N/A	
17496	DEV-Clear Creek Fm	N/A	
17550	DEV-Corniferous	N/A	
17582	SIL-Laurel Dol	DEV-Corniferous	0 BOPD
17588	DEV-Corniferous	N/A	
17592	DEV-Jeffersonville Ls	N/A	

17660	DEV-Clear Creek Fm	DEV-Clear Creek Fm	0 BOPD
17687	ORD-Breccia	DEV-Corniferous	8 BOPD
18752	DEV-Clear Creek Fm	MISS-O'Hara Lime	0 INJECT
21277	ORD-Breccia	N/A	
21322	ORD-Leipers Ls	ORD-Leipers Ls	2 BOPD
22861	SIL-Laurel Dol	N/A	
23475	SIL- Silurian System	N/A	
23477	ORD System	N/A	
24414	DEV-Corniferous	N/A	
24513	DEV-Corniferous	DEV-Corniferous	0 MCFGPD
24518	SIL- Silurian System	DEV-Corniferous	0 MCFGPD
24520	DEV-Corniferous	DEV-Corniferous	0 BOPD
24533	SIL-Brownspor Fm	MISS-Warsaw Fm	
24862	SIL-Decatur Ls	DEV-Clear Creek Fm	2 BOPD
24878	ORD-Knox Gp	DEV-Corniferous	0 BOPD
24985	SIL-Decatur Ls	DEV-Clear Creek Fm	4 BOPD
24987	DEV-Clear Creek Fm	N/A	
25006	DEV-Corniferous	N/A	
25007	DEV-Corniferous	N/A	
25065	DEV-Corniferous	DEV-Corniferous	4 BOPD
25165	SIL-Osgood Fm	MISS-Paint Creek Gp	250 MCFGPD
26194	ORD-Leipers Ls	N/A	
26231	DEV-Sellersburg Ls	DEV-New Albany Sh	450 MCFGPD
26540	DEV-New Albany Sh	N/A	
26541	DEV-Jeffersonville Ls	N/A	
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
26542	DEV-Jeffersonville Ls	N/A	
26543	DEV-New Albany Sh	N/A	
26544	DEV-New Albany Sh	N/A	
26549	DEV-Corniferous	MISS-Salem/Warsaw	545 MCFGPD
26609	DEV-Ross Fm	DEV-Clear Creek Fm	3 BOPD
26970	DEV-Clear Creek Fm	DEV-Clear Creek Fm	2 BOPD
27009	DEV- Middle Part	DEV-New Albany Sh	250 MCFGPD
27145	DEV-Clear Creek Fm	DEV-Clear Creek Fm	1 BOPD
27146	SIL-Upper Part	DEV-Clear Creek Fm	4 BOPD
27367	DEV-Corniferous	MISS-Warsaw Fm	0 MCFGPD
27852	DEV-Corniferous	N/A	
28285	DEV-Clear Creek	N/A	
28442	DEV-New Albany Sh	MISS-Ft Payne Fm	0 MCFGPD
28447	DEV-Sellersburg Ls	DEV-New Albany Sh	137 MCFGPD
28458	DEV- Middle Part	DEV-New Albany Sh	0 MCFGPD
28470	DEV- Upper Part	N/A	

29044	DEV-Corniferous	DEV-Corniferous	0 BOPD
29071	DEV-Corniferous	DEV-2nd Corniferous	0 BOPD
29102	SIL-Lego Ls	MISS-Ft Payne Fm	1 BOPD
30067	ORD-Knox Gp	N/A	
30090	SIL-Brownspor Fm	DEV-New Albany Sh	250 MCFGPD
30092	SIL-Decatur Ls	DEV-Clear Creek Fm	1 BOPD
30117	DEV-Ross Fm	DEV-Clear Creek Fm	0 BOPD
30118	DEV-Clear Creek Fm	N/A	
30483	DEV-Corniferous	DEV-Corniferous	4 BOPD
30670	DEV-Clear Creek Fm	N/A	
30794	DEV-New Albany Sh	DEV-New Albany Sh	200 MCFGPD
30795	DEV- Middle Part	DEV-New Albany Sh	400 MCFGPD
30824	ORD-Breccia	N/A	
31005	SIL-Laurel Dol	N/A	
31018	DEV-Sellersburg Ls	DEV-New Albany Sh	200 MCFGPD
31120	DEV-Corniferous	DEV-Corniferous	9 BOPD
31264	DEV-Clear Creek Fm	N/A	
31394	ORD-Stones River	N/A	
32126	SIL-Brassfield Dol	DEV-Corniferous	1 BOPD
32468	SIL-Waldron Sh	DEV-Clear Creek Fm	2 BOPD
32641	ORD-Clays Ferry Fm	N/A	
32959	ORD-Knox Gp	N/A	
33057	ORD-WelLs Creek Fm	N/A	
33896	SIL-Bailey Ls	DEV-Clear Creek Fm	0 BOPD
34176	SIL-Brownspor Fm	DEV-Clear Creek Fm	1 BOPD
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
34251	DEV-Clear Creek Fm	DEV-Clear Creek Fm	2 BOPD
34413	DEV-Corniferous	DEV-Corniferous	2 BOPD
34743	SIL-Decatur Ls	N/A	
35139	SIL-Brownspor Fm	DEV-Clear Creek Fm	0 BOPD
35370	DEV-Clear Creek Fm	DEV-Clear Creek Fm	0 BOPD
36020	DEV-Clear Creek Fm	DEV-Clear Creek Fm	0 BOPD
36251	DEV-New Albany Sh	DEV-New Albany Sh	400 MCFGPD
36373	DEV-Devonian System	DEV-New Albany Sh	300 MCFGPD
36411	SIL-Laurel Dol	N/A	
36701	DEV-Ross Fm	DEV-Clear Creek Fm	8 BOPD
37056	SIL-Decatur Ls	MISS-Warsaw Fm	0 MCFGPD
37057	SIL-Brassfield Dol	PALEO-Paleozoic Era	0 MCFGPD
37064	ORD-Breccia	PALEO-Paleozoic Era	0 BOPD
37649	SIL-Decatur Ls	DEV-Clear Creek Fm	3 BOPD
37651	DEV-Clear Creek Fm	DEV-Clear Creek Fm	0 BOPD
37710	SIL-Decatur Ls	DEV-Clear Creek Fm	12 BOPD

37719	DEV-Clear Creek Fm	DEV-Corniferous	4 BOPD
37826	DEV-Clear Creek Fm	N/A	
38267	DEV-Corniferous	DEV-Corniferous	1 BOPD
38274	ORD-Breccia	DEV-Corniferous	1 BOPD
38322	DEV-Devonian System	DEV-New Albany Sh	200 MCFGPD
38426	ORD-Breccia	SIL-Laurel Dol	5 BOPD
38932	DEV-Ross Fm	DEV-Clear Creek Fm	25 BOPD
41548	DEV-New Albany Sh	DEV-New Albany Sh	250 MCFGPD
41592	DEV-Corniferous	DEV-New Albany Sh	250 MCFGPD
41615	DEV-Ross Fm	DEV-Clear Creek Fm	3 BOPD
41696	SIL-Lego Ls	N/A	
41697	SIL-Lego Ls	N/A	
41725	SIL-Brownspor Fm	N/A	
41810	ORD-Sunnybrook	N/A	
41947	DEV-Corniferous	N/A	
42211	DEV-Corniferous	N/A	
42252	DEV-Corniferous	MISS-Salem Ls	0 MCFGPD
42524	DEV-Corniferous	N/A	
43185	DEV-Corniferous	DEV-Corniferous	0 BOPD
43186	DEV-Corniferous	DEV-Corniferous	0 BOPD
43551	DEV-Clear Creek Fm	DEV-New Albany Sh	0 MCFGPD
43567	DEV-Clear Creek Fm	DEV-New Albany Sh	375 MCFGPD
43875	SIL- Silurian System	N/A	
43976	DEV-Corniferous	DEV-Corniferous	2 BOPD
43985	DEV-Corniferous	N/A	
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
44002	SIL-Laurel Dol	N/A	
44194	ORD-Ordovician System	N/A	
44391	ORD-Knox Gp	N/A	
44511	DEV- Middle Part	N/A	
44554	DEV-Corniferous	DEV-Corniferous	2 BOPD
44735	DEV-Clear Creek Fm	DEV-Corniferous	0 MCFGPD
44743	DEV-Corniferous	N/A	
44795	ORD-Knox Gp	N/A	
44796	ORD-Breccia	DEV-Corniferous	3 BOPD
44820	SIL-Decatur Ls	DEV-Clear Creek Fm	2 BOPD
44831	DEV-Corniferous	DEV-Corniferous	0 BOPD
44884	DEV-Ross Fm	DEV-Clear Creek Fm	5 BOPD
44890	DEV-Clear Creek Fm	N/A	
44938	ORD-Breccia	DEV-Corniferous	10 BOPD
44942	DEV-Corniferous	DEV-Corniferous	0 BOPD
44957	DEV-Corniferous	N/A	

44962	ORD-Breccia	N/A	
44964	DEV-Clear Creek Fm	N/A	
44966	DEV-Corniferous	PALEO-Paleozoic Era	0 MCFGPD
45406	SIL-Decatur Ls	N/A	
45408	DEV-Clear Creek Fm	N/A	
45607	DEV-Clear Creek Fm	N/A	
45907	DEV-Clear Creek Fm	DEV-Clear Creek Fm	1 BOPD
46168	DEV-Devonian System	DEV-New Albany Sh	400 MCFGPD
46193	DEV-Corniferous	DEV-New Albany Sh	300 MCFGPD
46768	DEV-Corniferous	DEV-New Albany Sh	250 MCFGPD
46770	DEV-Corniferous	DEV-Corniferous	0 BOPD
46810	DEV-Clear Creek Fm	DEV-Clear Creek Fm	0 BOPD
47882	DEV-Corniferous	N/A	
47936	DEV-Devonian System	DEV-New Albany Sh	350 MCFGPD
48080	SIL-Brownspur Fm	N/A	
48511	SIL-Decatur Ls	DEV-Clear Creek Fm	1 BOPD
48678	ORD-Leipers Ls	SIL-Laurel Dol	0 BOPD
48712	DEV-Corniferous	DEV-Corniferous	2 BOPD
48915	DEV-Clear Creek Fm	DEV-Clear Creek Fm	1 BOPD
49185	DEV-Corniferous	DEV-Corniferous	4 BOPD
49529	DEV-Corniferous	DEV-Corniferous	3 BOPD
50331	DEV-Clear Creek Fm	DEV-Corniferous	0 MCFGPD
50333	ORD-Cumberland Fm	DEV-Clear Creek Fm	0 MCFGPD
50439	ORD-Leipers Ls	ORD-Leipers Ls	0 MCFGPD
50832	ORD-Leipers Ls	ORD-Leipers Ls	2 BOPD
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
50878	ORD-Knox Gp	N/A	
51143	ORD-Leipers Ls	N/A	
51478	DEV-Sellersburg Ls	DEV-New Albany Sh	250 MCFGPD
51636	SIL-Decatur Ls	N/A	
53626	ORD-Leipers Ls	N/A	
53903	DEV-Clear Creek Fm	MISS-Salem Ls	0 BOPD
54301	DEV-Jeffersonville Ls	N/A	
54921	Unknown or unassigned	N/A	
55626	SIL-Decatur Ls	N/A	
57212	ORD-Ordovician System	MISS-Ft Payne Fm	3 BOPD
57253	SIL-Laurel Dol	N/A	
57369	ORD System	N/A	
57470	DEV-Corniferous	DEV-Corniferous	1 BOPD
57726	SIL-Brassfield Dol	N/A	
57764	ORD-Leipers Ls	N/A	
58703	SIL-Osgood Fm	N/A	

59328	ORD-Knox Gp	N/A	
60392	DEV-Jeffersonville Ls	N/A	
60463	SIL-Laurel Dol	N/A	
60620	DEV-Devonian System	N/A	
60647	DEV-Clear Creek Fm	DEV-Clear Creek Fm	2 BOPD
60784	DEV-Devonian System	N/A	
61104	DEV-Corniferous	N/A	
61708	ORD-Stones River	N/A	
61894	ORD-Trenton Ls	MISS-McClosky Ls	20 BOPD
61911	ORD-Leipers Ls	SIL-Laurel Dol	1 BOPD
64431	ORD-Knox Gp	N/A	
64550	DEV-New Albany Sh	N/A	
64561	ORD-Breccia	N/A	
64699	SIL-Decatur Ls	N/A	
65374	DEV-Ross Fm	MISS-Hardinsburg Ss	100 MCFGPD
66140	SIL-Decatur Ls	DEV-Corniferous	1 MCFGPD
66243	DEV-Corniferous	N/A	
66398	DEV-Ross Fm	DEV-Clear Creek Fm	0 BOPD
66515	DEV-Corniferous	N/A	
67124	SIL-Louisville Ls	N/A	
67275	DEV-Clear Creek Fm	MISS-Warsaw Fm	1 BOPD
68018	DEV-Clear Creek Fm	N/A	
69043	SIL-Decatur Ls	DEV-Clear Creek Fm	10 BOPD
69391	DEV-Clear Creek Fm	DEV-Clear Creek Fm	2 BOPD
70030	SIL-Decatur Ls	DEV-Clear Creek Fm	1 BOPD
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
70521	DEV-Clear Creek Fm	DEV-Clear Creek Fm	1 BOPD
70700	SIL-Decatur Ls	DEV-Clear Creek Fm	1 BOPD
71650	DEV-Clear Creek Fm	DEV-Clear Creek Fm	2 BOPD
72123	DEV-Clear Creek Fm	N/A	
74160	DEV-Clear Creek Fm	DEV-Clear Creek Fm	3 BOPD
75341	ORD-Leipers Ls	N/A	
75437	DEV-Clear Creek Fm	MISS-Warsaw Fm	20 BOPD
76317	DEV-New Albany Sh	N/A	
76798	DEV-New Albany Sh	MISS-Ft Payne Fm	0 MCFGPD
77043	DEV-Ross Fm	N/A	
77871	DEV-New Albany Sh	N/A	
77995	DEV-Corniferous	N/A	
78566	SIL-Brassfield Dol	N/A	
78573	DEV-Ross Fm	N/A	
79583	DEV-Ross Fm	DEV-Clear Creek Fm	1 BOPD
80622	DEV-Clear Creek Fm	DEV-Clear Creek Fm	3 BOPD

80871	SIL-Waldron Sh	DEV-Clear Creek Fm	0 MCFGPD
81073	DEV-Jeffersonville Ls	MISS-Warsaw Fm	0 MCFGPD
81187	DEV-New Albany Sh	MISS-Ft Payne Fm	160 MCFGPD
81188	DEV-New Albany Sh	MISS-Ft Payne Fm	130 MCFGPD
81454	DEV-Clear Creek Fm	DEV-Clear Creek Fm	40 BOPD
81821	DEV-New Albany Sh	MISS-Ft Payne Fm	60 MCFGPD
82547	ORD-Drakes Fm	N/A	
82646	DEV-Corniferous	N/A	
82869	DEV-Clear Creek Fm	N/A	
82961	DEV-Corniferous	N/A	
83200	DEV-Corniferous	N/A	
83643	DEV-Corniferous	DEV-Corniferous	5 BOPD
84897	DEV-Clear Creek Fm	N/A	
85857	SIL-Decatur Ls	DEV-Clear Creek Fm	0 BOPD
85898	DEV-Clear Creek Fm	MISS-Warsaw Fm	0 MCFGPD
86110	SIL-Osgood Fm	N/A	
86659	DEV-Corniferous	N/A	
87133	SIL-Decatur Ls	N/A	
87342	SIL-Lego Ls	MISS-Warsaw Fm	0 MCFGPD
87691	DEV-Clear Creek Fm	DEV-Clear Creek Fm	3 BOPD
88126	ORD-Knox Gp	N/A	
88310	DEV-Corniferous	N/A	
88519	SIL-Brassfield Dol	N/A	
88720	SIL-SILURIAN System	N/A	
88824	DEV-Clear Creek Fm	N/A	
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
89627	SIL-Silurian System	MISS-Ft Payne Fm	0 MCFGPD
89864	DEV-Clear Creek Fm	N/A	
89887	DEV-Clear Creek Fm	N/A	
89889	SIL-Silurian System	N/A	
90181	SIL-Decatur Ls	DEV-Clear Creek Fm	30 BOPD
91075	ORD-Breccia	MISS-Hardinsburg Ss	900 MCFGPD
92068	ORD-Stones River	N/A	
92622	DEV-Corniferous	N/A	
93190	ORD-Leipers Ls	DEV-Corniferous	3 BOPD
93217	SIL-Brassfield Dol	N/A	
100378	ORD-Knox Gp	N/A	
101078	DEV-Corniferous	MISS-Ft Payne Fm	0 MCFGPD
101580	DEV-Corniferous	DEV-Corniferous	17 BOPD
101593	DEV-Clear Creek Fm	N/A	
101596	DEV-Jeffersonville Ls	N/A	
101599	DEV-New Albany Sh	MISS-Ft Payne Fm	

101654	DEV-Corniferous	PALEO-Paleozoic Era	0 BOPD
101660	DEV-Sellersburg Ls	N/A	
101732	DEV-Corniferous	N/A	
101733	DEV-Clear Creek Fm	N/A	
102191	DEV-Corniferous	N/A	
102215	DEV-Clear Creek Fm	DEV-Clear Creek Fm	0 BOPD
102491	DEV-Corniferous	N/A	
102827	ORD-High Bridge Gp	N/A	
103416	ORD-Knox Gp	N/A	
103481	SIL-Silurian System	N/A	
103599	SIL-Brownspor Fm	N/A	
104457	ORD-Breccia	N/A	
104458	ORD-Breccia	N/A	
104459	ORD-Breccia	N/A	
104629	ORD-Knox Gp	ORD-Knox Gp	
105693	ORD-Knox Gp	N/A	
105694	ORD-Knox Gp	N/A	
106588	ORD-Leipers Ls	ORD-Leipers Ls	0 BOPD
107711	DEV-Devonian Middle Part	N/A	
107951	DEV-Devonian Middle Part	N/A	
108682	DEV-Ross Fm	N/A	
108819	DEV-Corniferous	N/A	
109059	ORD-Knox Gp	N/A	
109085	DEV-Corniferous	N/A	
109279	DEV-Clear Creek Fm	N/A	
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
109338	DEV-Corniferous	DEV-Clear Creek Fm	3 BOPD
109440	DEV-Corniferous	DEV-Corniferous	0 BOPD
109472	DEV-Corniferous	N/A	
109556	DEV-Corniferous	N/A	
109750	ORD-Stones River	DEV-Clear Creek Fm	0 BOPD
109818	ORD-Maquoketa Sh	N/A	
110720	ORD-Knox Gp	N/A	
110810	DEV-Ross Fm	DEV-Clear Creek Fm	0 BOPD
110873	ORD-Murfreesboro	N/A	
111111	DEV-Clear Creek Fm	N/A	
111317	SIL-Decatur Ls	DEV-Clear Creek Fm	5 BOPD
111535	DEV-Backbone Ls	N/A	
111582	DEV-Corniferous	N/A	
111583	DEV-Corniferous	N/A	
111698	DEV-Corniferous	N/A	
111711	DEV-Corniferous	DEV-Clear Creek Fm	2 BOPD

111826	DEV-Corniferous	N/A	
111833	DEV-Corniferous	DEV-Corniferous	9 BOPD
111866	DEV-Clear Creek Fm	N/A	
112219	ORD-Cumberland Fm	N/A	
112229	DEV-New Albany Sh	N/A	
112277	DEV-Corniferous	DEV-Clear Creek Fm	5 BOPD
112288	DEV-Clear Creek Fm	N/A	
112435	DEV-Corniferous	DEV-Corniferous	15 BOPD
112764	ORD-Lexington Ls	N/A	
113002	SIL-Laurel Dol	N/A	
113076	DEV-Clear Creek Fm	N/A	
113543	SIL-Silurian System	N/A	
113949	SIL-Louisville Ls	N/A	
114144	SIL-Decatur Ls	N/A	
114292	DEV-Jeffersonville Ls	DEV-New Albany Sh	278 MCFGPD
114341	PALEO-Paleozoic Era	N/A	
114661	ORD-Middle ORD	N/A	
115223	DEV-Clear Creek	N/A	
115312	ORD System	N/A	
115429	DEV-Clear Creek Fm	MISS-Salem Ls	5 MCFGPD
120335	ORD-Lexington Ls	N/A	
120748	DEV-Grassy Knob Ls	N/A	
121349	ORD-Ashlock Fm	SIL-Laurel Dol	
121595	ORD-Knox Gp	N/A	
122123	SIL-Brassfield Dol	MISS-Salem/Warsaw	
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
123053	SIL-Decatur Ls	DEV-New Albany Sh	22 MCFGPD
123336	SIL-Decatur Ls	N/A	
123654	DEV-Sellersburg Ls	DEV-New Albany Sh	150 MCFGPD
123757	DEV-Jeffersonville Ls	DEV-New Albany Sh	200 MCFGPD
124339	DEV-Sellersburg Ls	DEV-Ohio Sh	
124491	DEV-Sellersburg Ls	DEV-New Albany Sh	27 MCFGPD
124493	DEV-Sellersburg Ls	DEV-New Albany Sh	26 MCFGPD
124522	DEV-Sellersburg Ls	DEV-New Albany Sh	30 MCFGPD
124524	DEV-Sellersburg Ls	DEV-New Albany Sh	28 MCFGPD
124638	DEV-Jeffersonville Ls	DEV-New Albany Sh	30 MCFGPD
125043	ORD-Knox Gp	N/A	
125506	SIL-Bailey Ls	MISS-Ft Payne Fm	
125635	ORD-Knox Gp	MISS-Ft Payne Fm	5 MCFGPD
125769	DEV-Clear Creek Fm	MISS-Ft Payne Fm	65 MCFGPD
126005	SIL-Bailey Ls	SIL-Laurel Dol	
126648	SIL-Bailey Ls	DEV-Corniferous	

126649	SIL-Bailey Ls	DEV-Corniferous	
126650	SIL-Bailey Ls	DEV-Corniferous	
126810	SIL-Bailey Ls	DEV-Corniferous	
127044	SIL-Bailey Ls	DEV-Corniferous	
127048	SIL-Bailey Ls	DEV-Corniferous	
127228	DEV-Sellersburg Ls	DEV-New Albany Sh	
127229	DEV-Sellersburg Ls	DEV-New Albany Sh	
127242	DEV-Clear Creek Fm	MISS-Ft Payne Fm	150 MCFGPD
127243	SIL-Bailey Ls	DEV-Corniferous	
127304	DEV-Sellersburg Ls	DEV-New Albany Sh	
128673	DEV-Devonian Lower Part	DEV-Ohio Sh	
128777	DEV-Jeffersonville Ls	DEV-New Albany Sh	
129065	DEV-Devonian Middle Part	DEV-New Albany Sh	
129425	DEV-Devonian Middle Part	DEV-New Albany Sh	
129907	DEV-Devonian Middle Part	DEV-New Albany Sh	146 MCFGPD
129908	DEV-Devonian Middle Part	DEV-New Albany Sh	133 MCFGPD
129973	DEV-Devonian Middle Part	DEV-New Albany Sh	
130060	DEV-Devonian Middle Part	DEV-New Albany Sh	103 MCFGPD
130135	DEV-Devonian Middle Part	DEV-Ohio Sh	
131875	ORD-Clays Ferry Fm	MISS-Ft Payne Fm	40 MCFGPD
132142	DEV-Devonian Lower Part	MISS-Salem Ls	
132143	DEV-Devonina Lower Part	DEV-Ohio Sh	
132325	SIL-Brownspor Fm	MISS-Ft Payne Fm	
132326	SIL-Brownspor Fm	MISS-Ft Payne Fm	25 MCFGPD
132327	SIL-Bailey Ls	DEV-Chattanooga Sh	25 MCFGPD
KGS REC	TD_FORMATION	DEEPEST_PAY	IOF_IP
132433	ORD-Beekmantown Dol	SIL-Silurian System	
133831	SIL-Decatur Ls	N/A	
134591	SIL-Bailey Ls	DEV-Clear Creek Fm	2 BOPD
134670	DEV-Devonian Middle Part	N/A	
135644	SIL-Brownspor Fm	N/A	
135647	SIL-Brownspor Fm	N/A	
136312	DEV-Clear Creek Fm	DEV-Clear Creek Fm	
136624	SIL-Decatur Ls	SIL-Decatur Ls	
136630	DEV-Clear Creek Fm	DEV-New Albany Sh	
136631	DEV-Jeffersonville Ls	DEV-New Albany Sh	
137175	DEV-Clear Creek Fm	DEV-New Albany Sh	100 MCFGPD
137356	SIL-Lego Ls	DEV-Clear Creek Fm	6 BOPD
137575	SIL-Silurian System	DEV-Clear Creek Fm	
137576	SIL-Brownspor Fm	DEV-Clear Creek Fm	
138273	DEV-Sellersburg Ls	N/A	
138396	DEV-Clear Creek Fm	N/A	

138644	DEV-Jeffersonville Ls	ORD-Knox Gp	
139171	DEV-Jeffersonville Ls	N/A	
141283	Unknown or unassigned	N/A	
141285	Unknown or unassigned	N/A	
143084	Unknown or unassigned	N/A	
2000111	DEV-Corniferous	N/A	
2029993	DEV-Corniferous	N/A	
2030235	ORD-Cumberland Fm	SIL-Laurel Dol	12 BOPD
2037542	DEV-Corniferous	N/A	
2037613	DEV-Corniferous	N/A	
2037770	PALEO-Paleozoic Era	N/A	
2039921	SIL-Brassfield Dol	N/A	
2040109	DEV-Corniferous	N/A	
2040429	DEV-Corniferous	N/A	
2040433	DEV-Jeffersonville Ls	N/A	
2040888	Unknown or unassigned	N/A	
2042187	DEV-Corniferous	N/A	

### Appendix III: Well Data Tables (Formation tops)

KGS REC	SURF_ELEV	TS_DEM	TD_MD	TD_SS	TD_SS_DEM
1360	570	568.6	2075	-1505	-1506.4
1561	607	609.7	500	107	109.7
KGS REC	SURF_ELEV	TS_DEM	TD_MD	TD_SS	TD_SS_DEM
1612	570	568.7	447	123	121.7
1647	637	632	2180	-1543	-1548
1677	680	680.5	2190	-1510	-1509.5
2089	695	695.9	573	122	122.9
2182	704	703.8	2274	-1570	-1570.2
2183	667	667.6	900	-233	-232.4
2619	491	495.2	3735	-3244	-3239.8
2626	484	448.1	2500	-2016	-2051.9
2627	408	409	5711	-5303	-5302
2628	424	421.7	3465	-3041	-3043.3
2631	682	685.1	4460	-3778	-3774.9
8245	643	636.5	602	41	34.5
8247	665	651.9	657	8	-5.1
8249	578	579.4	3131	-2553	-2551.6
8254	608	618	1387	-779	-769
8255	515	508	1265	-750	-757
8268	760	762.7	1582	-822	-819.3
8288	521	512	1640	-1119	-1128
8840	582	583.9	1602	-1020	-1018.1
8852	582	583.7	1667	-1085	-1083.3
8853	566	562.4	1671	-1105	-1108.6
8856	738	737.9	1903	-1165	-1165.1
8870	742	741.5	1907	-1165	-1165.5
8884	747	741.8	1950	-1203	-1208.2
8922	543	539.7	1461	-918	-921.3
8929	700	703.4	1678	-978	-974.6
8931	710	706.1	1671	-961	-964.9
8942	665	671.9	1672	-1007	-1000.1
8949	700	693.8	1732	-1032	-1038.2
8950	706	699.3	1714	-1008	-1014.7
8966	730	727.9	3910	-3180	-3182.1
8970	602	606.1	1611	-1009	-1004.9
8974	692.3	690.4	13551	-12858.7	-12860.6
8979	585	573.6	2500	-1915	-1926.4
8985	654	653.9	2482	-1828	-1828.1
9892	615	617.9	2173	-1558	-1555.1
9948	521	512.5	885	-364	-372.5

10018	590	552	1306	-716	-754
10037	640	652.7	3128	-2488	-2475.3
12499	529	531.5	1300	-771	-768.5
12520	625	622.7	3613	-2988	-2990.3
12534	686	704.5	1297	-611	-592.5
12535	642	665.7	1086	-444	-420.3
KGS REC	SURF_ELEV	TS_DEM	TD_MD	TD_SS	TD_SS_DEM
12557	655	659.9	1035	-380	-375.1
12581	628	635.9	1395	-767	-759.1
12585	581	580	1366	-785	-786
12588	716	714.8	1490	-774	-775.2
12589	727	725.8	1491	-764	-765.2
12611	754	752.3	2316	-1562	-1563.7
12623	484	486.7	1905	-1421	-1418.3
12632	492	490.3	2400	-1908	-1909.7
12659	688	689.8	1581	-893	-891.2
16942	688	688.5	1000	-312	-311.5
16946	658	659.3	3672	-3014	-3012.7
16951	638	624.2	620	18	4.2
17423	482	480.5	428	54	52.5
17428	542	532.7	1540	-998	-1007.3
17448	579	576.3	1045	-466	-468.7
17470	485	478.4	4018	-3533	-3539.6
17473	540	544	3959	-3419	-3415
17494	633	637.3	1600	-967	-962.7
17496	639	633.4	1540	-901	-906.6
17550	470	458.5	1073	-603	-614.5
17582	650	649.1	666	-16	-16.9
17588	412	409.7	1948	-1536	-1538.3
17592	603	592.9	1632	-1029	-1039.1
17660	602	617.1	1375	-773	-757.9
17687	608	607.4	1605	-997	-997.6
18752	500	494.4	3752	-3252	-3257.6
21277	804	796.4	352	452	444.4
21322	769	769.8	532	237	237.8
22861	575	562.7	1442	-867	-879.3
23475	618	618.9	1455	-837	-836.1
23477	688	687.1	1627	-939	-939.9
24414	576	572	515	61	57
24513	626	623.6	1031	-405	-407.4
24518	570	565.8	723	-153	-157.2
24520	605	606.3	455	150	151.3

24533	632	631.6	1506	-874	-874.4
24862	679	678	1325	-646	-647
24878	580	585.3	2135	-1555	-1549.7
24985	645	642.6	1326	-681	-683.4
24987	642	647.1	1326	-684	-678.9
25006	658	658.4	1404	-746	-745.6
KGS REC	SURF_ELEV	TS_DEM	TD_MD	TD_SS	TD_SS DEM
25007	663	664	468	195	196
25065	630	630.2	402	228	228.2
25165	600	608.7	3390	-2790	-2781.3
26194	690	689.3	551	139	138.3
26231	480	484.5	1704	-1224	-1219.5
26540	438	441.4	1715	-1277	-1273.6
26541	406	411.2	1790	-1384	-1378.8
26542	610	607.1	1918	-1308	-1310.9
26543	656	657.3	1935	-1279	-1277.7
26544	660	663.4	1922	-1262	-1258.6
26549	640	642	735	-95	-93
26609	562	562.1	1043	-481	-480.9
26970	520	521.6	1335	-815	-813.4
27009	554	538.8	1765	-1211	-1226.2
27145	608	617.7	1230	-622	-612.3
27146	605	600.5	1429	-824	-828.5
27367	580	583.4	1550	-970	-966.6
27852	612	610.5	848	-236	-237.5
28285	661	663	1425	-764	-762
28442	680	684	1645	-965	-961
28447	689	699.1	1688	-999	-988.9
28458	520	533.3	1482	-962	-948.7
28470	730	734	1762	-1032	-1028
29044	499	498.3	1275	-776	-776.7
29071	673	677.8	1480	-807	-802.2
29102	590	590.8	1454	-864	-863.2
30067	665	663.9	2424	-1759	-1760.1
30090	479	478.4	1706	-1227	-1227.6
30092	601	597.5	1135	-534	-537.5
30117	500	484.5	852	-352	-367.5
30118	602	600.6	1150	-548	-549.4
30483	632	634.5	565	67	69.5
30670	545	546.4	1490	-945	-943.6
30794	755	764.1	1950	-1195	-1185.9
30795	528	534.8	1740	-1212	-1205.2

30824	822	821.1	603	219	218.1
31005	712	710.1	505	207	205.1
31018	507	502.2	1716	-1209	-1213.8
31120	751	756.9	303	448	453.9
31264	475	480.3	1480	-1005	-999.7
31394	616	616.9	1955	-1339	-1338.1
KGS REC	SURF_ELEV	TS_DEM	TD_MD	TD_SS	TD_SS DEM
32126	503	502.6	1360	-857	-857.4
32468	600	600.5	1235	-635	-634.5
32641	635	634.2	692	-57	-57.8
32959	650	649.5	2770	-2120	-2120.5
33057	625	624.3	2130	-1505	-1505.7
33896	670	668.2	1531	-861	-862.8
34176	617	612.1	1313	-696	-700.9
34251	514	517.5	1385	-871	-867.5
34413	560	531.2	430	130	101.2
34743	551	553.4	1403	-852	-849.6
35139	448	448.8	997	-549	-548.2
35370	757	757.4	1308	-551	-550.6
36020	628	632.4	1300	-672	-667.6
36251	521	523	1675	-1154	-1152
36373	515	515.8	1705	-1190	-1189.2
36411	615	616.9	1889	-1274	-1272.1
36701	550	550.1	1276	-726	-725.9
37056	585	608.6	866	-281	-257.4
37057	590	587.1	900	-310	-312.9
37064	560	561.8	975	-415	-413.2
37649	438	438	1005	-567	-567
37651	537	536.6	1164	-627	-627.4
37710	473	474.6	1034	-561	-559.4
37719	568	565.8	1225	-657	-659.2
37826	422	420	1314	-892	-894
38267	581	580.2	1028	-447	-447.8
38274	554	553.8	1400	-846	-846.2
38322	733	729.1	1875	-1142	-1145.9
38426	688	689.1	410	278	279.1
38932	545	547.4	1509	-964	-961.6
41548	540	547.9	1725	-1185	-1177.1
41592	502	505.5	1703	-1201	-1197.5
41615	647	645.2	1291	-644	-645.8
41696	584	584.7	780	-196	-195.3
41697	568	571.3	725	-157	-153.7

41725	642	639.1	909	-267	-269.9
41810	590	590.4	1530	-940	-939.6
41947	589	588.8	500	89	88.8
42211	626	624.3	1330	-704	-705.7
42252	594	591.3	575	19	16.3
42524	560	561.2	532	28	29.2
KGS REC	SURF_ELEV	TS_DEM	TD_MD	TD_SS	TD_SS DEM
43185	706	701.4	380	326	321.4
43186	636	630.8	401	235	229.8
43551	705	724.8	1975	-1270	-1250.2
43567	649	650.8	1854	-1205	-1203.2
43875	607	604.6	1225	-618	-620.4
43976	615	615.7	522	93	93.7
43985	658	649.9	1025	-367	-375.1
44002	618	617.9	1000	-382	-382.1
44194	510	512.6	2885	-2375	-2372.4
44391	740	732.2	2929	-2189	-2196.8
44511	432	433.4	3505	-3073	-3071.6
44554	749	757.1	423	326	334.1
44735	596	584.1	1406	-810	-821.9
44743	728	729.7	630	98	99.7
44795	436	432.8	3111	-2675	-2678.2
44796	491	487.5	903	-412	-415.5
44820	670	669.3	1350	-680	-680.7
44831	662	671	626	36	45
44884	426	429.8	1068	-642	-638.2
44890	710	690.6	1410	-700	-719.4
44938	600	597.6	706	-106	-108.4
44942	601	602.8	575	26	27.8
44957	535	540.1	800	-265	-259.9
44962	708	719.3	2145	-1437	-1425.7
44964	585	573.4	1478	-893	-904.6
44966	590	585.5	650	-60	-64.5
45406	682	673	1260	-578	-587
45408	570	571	1223	-653	-652
45607	706	703.9	1829	-1123	-1125.1
45907	578	579.2	1155	-577	-575.8
46168	707	707.3	1955	-1248	-1247.7
46193	509	512.1	1740	-1231	-1227.9
46768	707	704	1980	-1273	-1276
46770	636	634.5	1306	-670	-671.5
46810	595	596.5	998	-403	-401.5

47882	804	800.1	442	362	358.1
47936	720	723.4	1980	-1260	-1256.6
48080	454	471.5	3947	-3493	-3475.5
48511	790	790.4	1320	-530	-529.6
48678	615	611	917	-302	-306
48712	550	548	1060	-510	-512
KGS REC	SURF_ELEV	TS DEM	TD_MD	TD_SS	TD_SS DEM
48915	473	443.6	1315	-842	-871.4
49185	508	508.9	1017	-509	-508.1
49529	590	589.6	969	-379	-379.4
50331	652	649.5	1365	-713	-715.5
50333	630	627.5	1850	-1220	-1222.5
50439	800	788.3	1328	-528	-539.7
50832	773	773.1	997	-224	-223.9
50878	747	730.9	1856	-1109	-1125.1
51143	660	664.6	452	208	212.6
51478	520	514.8	1775	-1255	-1260.2
51636	594	646.7	1250	-656	-603.3
53626	614	611.8	1000	-386	-388.2
53903	650	678.5	1237	-587	-558.5
54301	410	408.1	2712	-2302	-2303.9
54921	688	689	1414	688	-725
55626	492	492.9	1003	-511	-510.1
57212	667	676.1	2320	-1653	-1643.9
57253	740	739.7	1646	-906	-906.3
57369	749	744.2	2305	-1556	-1560.8
57470	663	667.3	1450	-787	-782.7
57726	693	691.6	1557	-864	-865.4
57764	657	657.6	850	-193	-192.4
58703	782	781.7	380	402	401.7
59328	629	630.7	3700	-3071	-3069.3
60392	680	682.3	1650	-970	-967.7
60463	660	662.8	475	185	187.8
60620	538	537.1	2165	-1627	-1627.9
60647	773	771.9	1320	-547	-548.1
60784	429	417.1	2545	-2116	-2127.9
61104	580	580.5	699	-119	-118.5
61708	718	719.3	1103	-385	-383.7
61894	556	556.3	3624	-3068	-3067.7
61911	675	679.8	500	175	179.8
64431	699	697.9	1980	-1281	-1282.1
64550	427	429.3	1475	-1048	-1045.7

64561	660	654	1156	-496	-502
64699	590	592.8	1557	-967	-964.2
65374	550	554.5	1900	-1350	-1345.5
66140	660	657.7	1020	-360	-362.3
66243	599	600.2	502	97	98.2
66398	461	458.3	1075	-614	-616.7
KGS REC	SURF_ELEV	TS DEM	TD_MD	TD_SS	TD_SS DEM
66515	628	622.5	1555	-927	-932.5
67124	640	639.8	453	187	186.8
67275	453	455.7	1129	-676	-673.3
68018	545	568	1375	-830	-807
69043	534	519.8	1291	-757	-771.2
69391	610	617	1176	-566	-559
70030	524	523.3	1200	-676	-676.7
70521	605	600.5	974	-369	-373.5
70700	444	441.7	1378	-934	-936.3
71650	538	528.6	1450	-912	-921.4
72123	544	543.5	1536	-992	-992.5
74160	588	588.8	978	-390	-389.2
75341	533	531.2	701	-168	-169.8
75437	546	549.3	1447	-901	-897.7
76317	531	531.1	664	-133	-132.9
76798	538	538.7	753	-215	-214.3
77043	599	593.7	1140	-541	-546.3
77871	503	500.1	600	-97	-99.9
77995	474	465.7	1253	-779	-787.3
78566	558	560.5	925	-367	-364.5
78573	579	578.1	1550	-971	-971.9
79583	503	499.2	1210	-707	-710.8
80622	718	731.1	1346	-628	-614.9
80871	576	573.5	1065	-489	-491.5
81073	576	573	900	-324	-327
81187	546	540.7	520	26	20.7
81188	554	551	540	14	11
81454	608	608	1030	-422	-422
81821	536	561.9	725	-189	-163.1
82547	651	653.9	419	232	234.9
82646	709	710.7	398	311	312.7
82869	646	646.2	1575	-929	-928.8
82961	702	701.8	223	479	478.8
83200	612	610.4	1350	-738	-739.6
83643	615	601.3	1318	-703	-716.7

84897	580	586.5	1536	-956	-949.5
85857	719	737.1	1252	-533	-514.9
85898	697	698.5	1589	-892	-890.5
86110	857	855.3	355	502	500.3
86659	544	538	950	-406	-412
87133	549	549.1	910	-361	-360.9
KGS REC	SURF_ELEV	TS DEM	TD_MD	TD_SS	TD_SS DEM
87342	683	701.3	800	-117	-98.7
87691	632	629.3	1431	-799	-801.7
88126	512	512.4	4470	-3958	-3957.6
88310	610	607.1	550	60	57.1
88519	725	720.4	825	-100	-104.6
88720	518	517.7	1760	-1242	-1242.3
88824	490	492.5	1811	-1321	-1318.5
89627	528	524.2	1302	-774	-777.8
89864	448	419.1	2090	-1642	-1670.9
89887	402	400.4	3050	-2648	-2649.6
89889	396	399.6	3102	-2706	-2702.4
90181	601	574.8	1318	-717	-743.2
91075	429	435.8	2440	-2011	-2004.2
92068	725	720.4	1350	-625	-629.6
92622	557	555.5	519	38	36.5
93190	683	680.6	553	130	127.6
93217	742	746.5	1254	-512	-507.5
100378	631	631.1	3280	-2649	-2648.9
101078	555	567.6	546	9	21.6
101580	529	514.9	904	-375	-389.1
101593	446	448	1847	-1401	-1399
101596	520	592.1	1270	-750	-677.9
101599	725	738.5	1955	-1230	-1216.5
101654	557	558.9	411	146	147.9
101660	650	658.8	978	-328	-319.2
101732	574	571.8	806	-232	-234.2
101733	517	522.7	1198	-681	-675.3
102191	539	542.4	587	-48	-44.6
102215	562	563	525	37	38
102491	575	572.6	1704	-1129	-1131.4
102827	446	456.1	3998	-3552	-3541.9
103416	621	619.6	2515	-1894	-1895.4
103481	864	869.7	1498	-634	-628.3
103599	439	439	1644	-1205	-1205
104457	566	564.1	1206	-640	-641.9

104458	986	592.5	1117	-131	-524.5
104459	798	794.5	1070	-272	-275.5
104629	446	456.1	6450	446	-5993.9
105693	596	598.3	3000	-2404	-2401.7
105694	652	651.8	2303	-1651	-1651.2
106588	728	727.2	472	256	255.2
KGS REC	SURF_ELEV	TS_DEM	TD_MD	TD_SS	TD_SS DEM
107711	605	604.8	1400	-795	-795.2
107951	583	586.5	1930	-1347	-1343.5
108682	645	652.7	1422	-777	-769.3
108819	680	686.6	1445	-765	-758.4
109059	613	612.6	3106	-2493	-2493.4
109085	635	638.9	1280	-645	-641.1
109279	542	533.2	1959	-1417	-1425.8
109338	579	579.6	1292	-713	-712.4
109440	623	626	1350	-727	-724
109472	617	614.4	1369	-752	-754.6
109556	573	567.5	1659	-1086	-1091.5
109750	577	575.3	2703	-2126	-2127.7
109818	462	469.3	4715	-4253	-4245.7
110720	862	863.8	2968	-2106	-2104.2
110810	603	603.1	1346	-743	-742.9
110873	698	697.7	3210	-2512	-2512.3
111111	635	639.7	2200	-1565	-1560.3
111317	616	614.8	1497	-881	-882.2
111535	612	612.6	1750	-1138	-1137.4
111582	619	624.5	1435	-816	-810.5
111583	590	588.7	1455	-865	-866.3
111698	702	709.4	1510	-808	-800.6
111711	678	674.7	1622	-944	-947.3
111826	701	700.1	1435	-734	-734.9
111833	543	533.4	1368	-825	-834.6
111866	423	423.7	2060	-1637	-1636.3
112219	560	525.1	2003	-1443	-1477.9
112229	622	621.5	1897	-1275	-1275.5
112277	645	643.9	1345	-700	-701.1
112288	681	633.7	2041	-1360	-1407.3
112435	660	660.2	1477	-817	-816.8
112764	702	719.8	2000	-1298	-1280.2
113002	751	751.3	1605	-854	-853.7
113076	695	695.7	2066	-1371	-1370.3
113543	893	887.2	1585	-692	-697.8

113949	818	810.6	1830	-1012	-1019.4
114144	694	681.7	1550	-856	-868.3
114292	682	672.3	2027	-1345	-1354.7
114341	713	702.8	1500	-787	-797.2
114661	431	430.5	4500	-4069	-4069.5
115223	763	762.9	1500	-737	-737.1
KGS REC	SURF_ELEV	TS_DEM	TD_MD	TD_SS	TD_SS DEM
115312	796	796	3500	-2704	-2704
115429	549	541	1907	-1358	-1366
120335	667	666.9	995	-328	-328.1
120748	619	617.4	1300	-681	-682.6
121349	666	665.4	1354	-688	-688.6
121595	664	669.7	6514	-5850	-5844.3
122123	676	667.6	1355	-679	-687.4
123053	541	530	840	-299	-310
123336	689	687	1000	-311	-313
123654	705	701.8	1985	-1280	-1283.2
123757	517	517.8	1862	-1345	-1344.2
124339	738	743	2084	-1346	-1341
124491	707	708.7	2010	-1303	-1301.3
124493	615	617.2	1959	-1344	-1341.8
124522	730	726.5	1960	-1230	-1233.5
124524	500	492.3	1836	-1336	-1343.7
124638	707	709.2	1984	-1277	-1274.8
125043	698	698.6	3057	-2359	-2358.4
125506	853	852.5	1180	-327	-327.5
125635	622	632.5	2356	-1734	-1723.5
125769	768	764.3	1203	-435	-438.7
126005	659	657.8	1227	-568	-569.2
126648	588	586.7	903	-315	-316.3
126649	709	704.9	1254	-545	-549.1
126650	667	662.6	1280	-613	-617.4
126810	815	815.3	1103	-288	-287.7
127044	770	771.2	1228	-458	-456.8
127048	791	790.5	1153	-362	-362.5
127228	617	622.6	4613	-3996	-3990.4
127229	449	447.3	2340	-1891	-1892.7
127242	643	646.9	954	-311	-307.1
127243	762	761.1	1205	-443	-443.9
127304	627	621	2650	-2023	-2029
128673	384	385.3	3481	-3097	-3095.7
128777	539	546.1	1710	-1171	-1163.9

129065	648	646.2	2075	-1427	-1428.8
129425	434	431.7	2847	-2413	-2415.3
129907	630	619.9	2260	-1630	-1640.1
129908	563	570.1	2254	-1691	-1683.9
129973	588	599.1	2314	-1726	-1714.9
130060	438	440.5	2045	-1607	-1604.5
KGS REC	SURF_ELEV	TS_DEM	TD_MD	TD_SS	TD_SS DEM
130135	718	718.1	1695	-977	-976.9
131875	592	594.2	1480	-888	-885.8
132142	552	552	2927	-2375	-2375
132143	502	502.6	2879	-2377	-2376.4
132325	615	617.1	862	-247	-244.9
132326	612	613.9	859	-247	-245.1
132327	568	568.8	850	-282	-281.2
132433	420	419.6	5053	-4633	-4633.4
133831	446	450.1	475	-29	-24.9
134591	594	595.2	1145	-551	-549.8
134670	462	462.7	2085	-1623	-1622.3
135644	756	757.3	1307	-551	-549.7
135647	714	704.3	1409	-695	-704.7
136312	533	531.7	1250	-717	-718.3
136624	580	579.4	893	-313	-313.6
136630	460	460	3902	-3442	-3442
136631	434	434.1	3699	-3265	-3264.9
137175	484	492.1	1846	-1362	-1353.9
137356	608	603.6	1570	-962	-966.4
137575	614	612.9	1000	-386	-387.1
137576	636	635.5	1000	-364	-364.5
138273	566	584.9	1358	-792	-773.1
138396	577	576.5	1465	-888	-888.5
138644	557	552.1	2235	-1678	-1682.9
139171	505	495.3	2254	-1749	-1758.7
141283	475	462.3	1464	-989	-1001.7
141285	586	582.8	1341	-755	-758.2
143084	492	486.9	3070	-2578	-2583.1
2000111	769	764.9	330	439	434.9
2029993	602	610.7	2589	-1987	-1978.3
2030235	755	753.9	340	415	413.9
2037542	647	642.6	850	-203	-207.4
2037613	731	730.2	625	106	105.2
2037770	685	683.1	1198	-513	-514.9
2039921	502	508.5	520	-18	-11.5

2040109	638	638.2	1497	-859	-858.8
2040429	702	702.8	535	167	167.8
2040433	606	602.6	1565	-959	-962.4
2040888	420	420	1888	-1468	-1468
2042187	630	629.2	534	96	95.2

KGS REC	T1_NAS_ t	T1_SS	T1_pres	T1_src	T1_ana_M D	T1_ana_SS
1360	208	360.6	P on log	LP-ADR	208	360.6
1561	132	477.7	P on log	LP-ADR	132	477.7
1612	313	255.7	P on log	LP-ADR	313	255.7
1647	338	294	P on log	LP-ADR	338	294
1677	288	392.5	P on log	LP-ADR	288	392.5
2089	272	423.9	P on log	LP-ADR	272	423.9
2182	504	199.8	P on log	LP-ADR	504	199.8
2183	566	101.6	P on log	LP-ADR	566	101.6
2619	1351	-855.8	P on log	LP-ADR	1351	-855.8
2626	1558	-1109.9	P on log	LP-ADR	1558	-1109.9
2627	2699	-2290	P on log	LP-ADR	2699	-2290
2628	2658	-2236.3	P on log	LP-ADR	2658	-2236.3
2631	1802	-1116.9	P on log	LP-ADR	1802	-1116.9
8245	490	146.5	P on log	LP-ADR	490	146.5
8247	544	107.9	P on log	LP-ADR	544	107.9
8249	1058	-478.6	P on log	LP-ADR	1058	-478.6
8254	1264	-646	P on log	LP-ADR	1264	-646
8255	1152	-644	P on log	LP-ADR	1152	-644
8268	1419	-656.3	P	DP-FMRP	1419	-656.3
8288	1466.5	-954.5	P on log	LP-ADR	1466.5	-954.5
8840	1444	-860.1	P on log	LP-ADR	1444	-860.1
8852	1498	-914.3	P on log	LP-ADR	1498	-914.3
8853	1528	-965.6	P on log	LP-ADR	1528	-965.6
8856	1722	-984.1	P on log	LP-ADR	1722	-984.1
8870	1717	-975.5	P on log	LP-ADR	1717	-975.5
8884	1761	-1019.2	P on log	LP-ADR	1761	-1019.2
8922	1329	-789.3	P on log	LP-ADR	1329	-789.3
8929	1512	-808.6	P on log	LP-ADR	1512	-808.6
8931	1508	-801.9	P on log	LP-ADR	1508	-801.9
8942	1503	-831.1	P on log	LP-ADR	1503	-831.1
8949	1582	-888.2	P on log	LP-ADR	1582	-888.2
8950	1572	-872.7	P on log	LP-ADR	1572	-872.7
8966	1474	-746.1	P on log	LP-ADR	1474	-746.1
8970	1371	-764.9	P on log	LP-ADR	1371	-764.9
8974	1520	-829.6	P on log	LP-ADR	1520	-829.6
8979	1303	-729.4	P on log	LP-ADR	1303	-729.4

8985	1006	-352.1	P on log	LP-ADR	1006	-352.1
9892	934	-316.1	P on log	LP-ADR	934	-316.1
9948	784	-271.5	P on log	LP-ADR	784	-271.5
10018	922.5	-370.5	P on log	LP-ADR	922.5	-370.5
10037	790	-137.3	P on log	LP-ADR	790	-137.3
12520	1053	-430.3	P on log	LP-ADR	1053	-430.3
KGS REC	T1_NAS- t	T1_SS	T1_pres	T1_src	T1_ana_M D	T1_ana_SS
12499	713	-181.5	P on log	LP-ADR	713	-181.5
12520	1053	-430.3	P on log	LP-ADR	1053	-430.3
12534	1023	-318.5	P	DP-FMRP	1023	-318.5
12535	938	-272.3	P	DP-FMRP	938	-272.3
12557	-9999.25	-9999.25	N/A	IC-N/A	940.5746	-280.6746
12581	1106	-470.1	P on log	LP-ADR	1106	-470.1
12585	1080	-500	P on log	LP-ADR	1080	-500
12588	1236	-521.2	P on log	LP-ADR	1236	-521.2
12589	1226	-500.2	P on log	LP-ADR	1226	-500.2
12611	1928	-1175.7	P	DP-FMRP	1928	-1175.7
12623	1595	-1108.3	P	DP-FMRP	1595	-1108.3
12632	1598	-1107.7	P on log	LP-ADR	1598	-1107.7
12659	1334	-644.2	P on log	LP-ADR	1334	-644.2
16942	896	-207.5	P	DP-FMRP	896	-207.5
16946	496	163.3	P	DP-FMRP	496	163.3
16951	464	160.2	P on log	LP-ADR	464	160.2
17423	208	272.5	P on log	LP-ADR	208	272.5
17428	959	-426.3	P on log	LP-ADR	959	-426.3
17448	826	-249.7	P on log	LP-ADR	826	-249.7
17470	529	-50.6	P on log	LP-ADR	529	-50.6
17473	528	16	P on log	LP-ADR	528	16
17494	1235	-597.7	P on log	LP-ADR	1235	-597.7
17496	1271	-637.6	P on log	LP-ADR	1271	-637.6
17550	750.8	-292.3	P on log	LP-ADR	750.8	-292.3
17582	544	105.1	P on log	LP-ADR	544	105.1
17588	1684	-1274.3	P on log	LP-ADR	1684	-1274.3
17592	1328.5	-735.6	P on log	LP-ADR	1328.5	-735.6
17660	1108	-490.9	P on log	LP-ADR	1108	-490.9
17687	1056	-448.6	P on log	LP-ADR	1056	-448.6
18752	3237	-2742.6	P	DP-FMRP	3237	-2742.6
21277	263	533.4	P on log	LP-ADR	263	533.4
21322	336	433.8	P on log	LP-ADR	336	433.8
22861	1028	-465.3	P on log	LP-ADR	1028	-465.3
23475	1144	-525.1	P on log	LP-ADR	1144	-525.1
23477	1005	-317.9	P on log	LP-ADR	1005	-317.9

24414	388	184	P on log	LP-ADR	388	184
24513	751	-127.4	P on log	LP-ADR	751	-127.4
24518	475	90.8	P on log	LP-ADR	475	90.8
24520	357	249.3	P on log	LP-ADR	357	249.3
24533	1181	-549.4	P on log	LP-ADR	1181	-549.4
24862	1039.9	-361.9	P on log	LP-ADR	1039.9	-361.9
KGS REC	T1_NAS- t	T1_SS	T1_pres	T1_src	T1_ana_M D	T1_ana_SS
24878	277	308.3	P on log	LP-ADR	277	308.3
24985	1087	-444.4	P on log	LP-ADR	1087	-444.4
24987	1094	-446.9	P on log	LP-ADR	1094	-446.9
25006	1147	-488.6	P on log	LP-ADR	1147	-488.6
25007	370	294	P on log	LP-ADR	370	294
25065	258	372.2	P on log	LP-ADR	258	372.2
25165	2052	-1443.3	P on log	LP-ADR	2052	-1443.3
26194	540	149.3	P on log	LP-ADR	540	149.3
26231	1522	-1037.5	P on log	LP-ADR	1522	-1037.5
26540	1707.8	-1266.4	P on log	LP-ADR	1707.8	-1266.4
26541	1638.3	-1227.1	P on log	LP-ADR	1638.3	-1227.1
26542	1739	-1131.9	P on log	LP-ADR	1739	-1131.9
26543	1826	-1168.7	P on log	LP-ADR	1826	-1168.7
26544	1879	-1215.6	P on log	LP-ADR	1879	-1215.6
26549	595	47	P on log	LP-ADR	595	47
26609	834	-271.9	P on log	LP-ADR	834	-271.9
26970	1089	-567.4	P on log	LP-ADR	1089	-567.4
27009	1579	-1040.2	P on log	LP-ADR	1579	-1040.2
27145	998	-380.3	P on log	LP-ADR	998	-380.3
27146	1170	-569.5	P	DP-FMRP	1170	-569.5
27367	1158	-574.6	P on log	LP-ADR	1158	-574.6
27852	675	-64.5	P	DP-FMRP	675	-64.5
28285	1190	-527	P on log	LP-ADR	1190	-527
28442	1503	-819	P on log	LP-ADR	1503	-819
28447	1526	-826.9	P on log	LP-ADR	1526	-826.9
28458	1316	-782.7	P on log	LP-ADR	1316	-782.7
28470	1495	-761	P on log	LP-ADR	1495	-761
29044	972	-473.7	P on log	LP-ADR	972	-473.7
29071	1157	-479.2	P on log	LP-ADR	1157	-479.2
29102	1146	-555.2	P on log	LP-ADR	1146	-555.2
30067	585	78.9	P on log	LP-ADR	585	78.9
30090	1527	-1048.6	P on log	LP-ADR	1527	-1048.6
30092	958.5	-361	P on log	LP-ADR	958.5	-361
30117	662	-177.5	P on log	LP-ADR	662	-177.5
30118	905	-304.4	P on log	LP-ADR	905	-304.4

30483	433	201.5	P on log	LP-ADR	433	201.5
30670	1221	-674.6	P on log	LP-ADR	1221	-674.6
30794	1776	-1011.9	P on log	LP-ADR	1776	-1011.9
30795	1561	-1026.2	P on log	LP-ADR	1561	-1026.2
30824	184	637.1	P on log	LP-ADR	184	637.1
31005	233	477.1	P on log	LP-ADR	233	477.1
KGS REC	T1_NAS_‐ t	T1_SS	T1_pres	T1_src	T1_ana_M D	T1_ana_SS
31018	1536	-1033.8	P on log	LP-ADR	1536	-1033.8
31120	234	522.9	P on log	LP-ADR	234	522.9
31264	1211	-730.7	P on log	LP-ADR	1211	-730.7
31394	802	-185.1	P on log	LP-ADR	802	-185.1
32126	801	-298.4	P on log	LP-ADR	801	-298.4
32468	883	-282.5	P on log	LP-ADR	883	-282.5
32641	282	352.2	P on log	LP-ADR	282	352.2
32959	196	453.5	P on log	LP-ADR	196	453.5
33057	576	48.3	P on log	LP-ADR	576	48.3
33896	1221	-552.8	P on log	LP-ADR	1221	-552.8
34176	1095	-482.9	P on log	LP-ADR	1095	-482.9
34251	1080	-562.5	P on log	LP-ADR	1080	-562.5
34413	238	293.2	P on log	LP-ADR	238	293.2
34743	1117	-563.6	P on log	LP-ADR	1117	-563.6
35139	775	-326.2	P on log	LP-ADR	775	-326.2
35370	1078	-320.6	P on log	LP-ADR	1078	-320.6
36020	1064	-431.6	P on log	LP-ADR	1064	-431.6
36251	1500	-977	P on log	LP-ADR	1500	-977
36373	1534	-1018.2	P on log	LP-ADR	1534	-1018.2
36411	1305	-688.1	P on log	LP-ADR	1305	-688.1
36701	1003	-452.9	P on log	LP-ADR	1003	-452.9
37056	528	80.6	P on log	LP-ADR	528	80.6
37057	479	108.1	P on log	LP-ADR	479	108.1
37064	402	159.8	P on log	LP-ADR	402	159.8
37649	794	-356	P on log	LP-ADR	794	-356
37651	940	-403.4	P on log	LP-ADR	940	-403.4
37710	805	-330.4	P on log	LP-ADR	805	-330.4
37719	898	-332.2	P on log	LP-ADR	898	-332.2
37826	1035	-615	P on log	LP-ADR	1035	-615
38267	816	-235.8	P on log	LP-ADR	816	-235.8
38274	807	-253.2	P on log	LP-ADR	807	-253.2
38322	1705	-975.9	P on log	LP-ADR	1705	-975.9
38426	135	554.1	P on log	LP-ADR	135	554.1
38932	1209	-661.6	P on log	LP-ADR	1209	-661.6
41548	1552	-1004.1	P on log	LP-ADR	1552	-1004.1

41592	1527	-1021.5	P on log	LP-ADR	1527	-1021.5
41615	1030	-384.8	P on log	LP-ADR	1030	-384.8
41696	450	134.7	P on log	LP-ADR	450	134.7
41697	420	151.3	P on log	LP-ADR	420	151.3
41725	614	25.1	P on log	LP-ADR	614	25.1
41810	612	-21.6	P on log	LP-ADR	612	-21.6
KGS REC	T1_NAS_ t	T1_SS	T1_pres	T1_src	T1_ana_M D	T1_ana_SS
41947	378	210.8	P on log	LP-ADR	378	210.8
42211	1086	-461.7	P on log	LP-ADR	1086	-461.7
42252	388	203.3	P on log	LP-ADR	388	203.3
42524	400	161.2	P on log	LP-ADR	400	161.2
43185	270	431.4	P on log	LP-ADR	270	431.4
43186	206	424.8	P on log	LP-ADR	206	424.8
43551	1801	-1076.2	P on log	LP-ADR	1801	-1076.2
43567	1691	-1040.2	P on log	LP-ADR	1691	-1040.2
43875	955	-350.4	P on log	LP-ADR	955	-350.4
43976	410	205.7	P on log	LP-ADR	410	205.7
43985	891	-241.1	P on log	LP-ADR	891	-241.1
44002	722	-104.1	P on log	LP-ADR	722	-104.1
44194	1333	-820.4	P on log	LP-ADR	1333	-820.4
44391	1027	-294.8	P on log	LP-ADR	1027	-294.8
44511	2720	-2286.6	P on log	LP-ADR	2720	-2286.6
44554	292	465.1	P on log	LP-ADR	292	465.1
44735	1148	-563.9	P on log	LP-ADR	1148	-563.9
44743	396	333.7	P on log	LP-ADR	396	333.7
44795	802	-369.2	P on log	LP-ADR	802	-369.2
44796	708	-220.5	P on log	LP-ADR	708	-220.5
44820	1088	-418.7	P on log	LP-ADR	1088	-418.7
44831	508	163	P on log	LP-ADR	508	163
44884	819	-389.2	P on log	LP-ADR	819	-389.2
44890	1155	-464.4	P on log	LP-ADR	1155	-464.4
44938	468	129.6	P on log	LP-ADR	468	129.6
44942	488	114.8	P on log	LP-ADR	488	114.8
44957	588	-47.9	P on log	LP-ADR	588	-47.9
44962	1473	-753.7	P on log	LP-ADR	1473	-753.7
44964	1220	-646.6	P on log	LP-ADR	1220	-646.6
44966	495	90.5	P on log	LP-ADR	495	90.5
45406	1023	-350	P on log	LP-ADR	1023	-350
45408	956	-385	P on log	LP-ADR	956	-385
45607	1490	-786.1	P on log	LP-ADR	1490	-786.1
45907	970	-390.8	P on log	LP-ADR	970	-390.8
46168	1782	-1074.7	P on log	LP-ADR	1782	-1074.7

46193	1566	-1053.9	P on log	LP-ADR	1566	-1053.9
46768	1797	-1093	P on log	LP-ADR	1797	-1093
46770	1074	-439.5	P on log	LP-ADR	1074	-439.5
46810	816	-219.5	P on log	LP-ADR	816	-219.5
47882	196	604.1	P	DP-FMRP	196	604.1
47936	1800	-1076.6	P on log	LP-ADR	1800	-1076.6
KGS REC	T1_NAS_t	T1_SS	T1_pres	T1_src	T1_ana_M D	T1_ana_SS
48080	3170	-2698.5	P	DP-FMRP	3170	-2698.5
48511	1103	-312.6	P on log	LP-ADR	1103	-312.6
48678	433	178	P on log	LP-ADR	433	178
48712	882	-334	P on log	LP-ADR	882	-334
48915	1067	-623.4	P on log	LP-ADR	1067	-623.4
49185	814	-305.1	P on log	LP-ADR	814	-305.1
49529	765	-175.4	P on log	LP-ADR	765	-175.4
50331	1092	-442.5	P on log	LP-ADR	1092	-442.5
50333	1074	-446.5	P on log	LP-ADR	1074	-446.5
50439	853	-64.7	P on log	LP-ADR	853	-64.7
50832	532	241.1	P on log	LP-ADR	532	241.1
50878	120	610.9	P on log	LP-ADR	120	610.9
51143	180	484.6	P on log	LP-ADR	180	484.6
51478	1596	-1081.2	P on log	LP-ADR	1596	-1081.2
51636	1009	-362.3	P on log	LP-ADR	1009	-362.3
53626	724	-112.2	P on log	LP-ADR	724	-112.2
53903	1009	-330.5	P on log	LP-ADR	1009	-330.5
54301	2357	-1948.9	P on log	LP-ADR	2357	-1948.9
54921	1245	-556	P	DP-DRRP	1245	-556
55626	825	-332.1	P on log	LP-ADR	825	-332.1
57212	1429	-752.9	P on log	LP-ADR	1429	-752.9
57253	1131	-391.3	P on log	LP-ADR	1131	-391.3
57369	1456	-711.8	P on log	LP-ADR	1456	-711.8
57470	1176	-508.7	P on log	LP-ADR	1176	-508.7
57726	1052	-360.4	P on log	LP-ADR	1052	-360.4
57764	420	237.6	P on log	LP-ADR	420	237.6
58703	162	619.7	P on log	LP-ADR	162	619.7
59328	1385	-754.3	P on log	LP-ADR	1385	-754.3
60392	1423	-740.7	P on log	LP-ADR	1423	-740.7
60463	300	362.8	P on log	LP-ADR	300	362.8
60620	1964	-1426.9	P on log	LP-ADR	1964	-1426.9
60647	1133	-361.1	P on log	LP-ADR	1133	-361.1
60784	2326	-1908.9	P on log	LP-ADR	2326	-1908.9
61104	554	26.5	P on log	LP-ADR	554	26.5
61708	110	609.3	P on log	LP-ADR	110	609.3

61894	2163	-1606.7	P on log	LP-ADR	2163	-1606.7
61911	180	499.8	P on log	LP-ADR	180	499.8
64431	418	279.9	P on log	LP-ADR	418	279.9
64550	1448.3	-1019	P on log	LP-ADR	1448.3	-1019
64561	792	-138	P on log	LP-ADR	792	-138
64699	1199	-606.2	P on log	LP-ADR	1199	-606.2
KGS REC	T1_NAS_t	T1_SS	T1_pres	T1_src	T1_ana_MD	T1_ana_SS
65374	1566	-1011.5	P on log	LP-ADR	1566	-1011.5
66140	747	-89.3	P on log	LP-ADR	747	-89.3
66243	379	221.2	P on log	LP-ADR	379	221.2
66398	847	-388.7	P on log	LP-ADR	847	-388.7
66515	1260	-637.5	P on log	LP-ADR	1260	-637.5
67124	268	371.8	P on log	LP-ADR	268	371.8
67275	884	-428.3	P on log	LP-ADR	884	-428.3
68018	1108	-540	P on log	LP-ADR	1108	-540
69043	1010	-490.2	P on log	LP-ADR	1010	-490.2
69391	881	-264	P on log	LP-ADR	881	-264
70030	918	-394.7	P on log	LP-ADR	918	-394.7
70521	788	-187.5	P on log	LP-ADR	788	-187.5
70700	980	-538.3	P on log	LP-ADR	980	-538.3
71650	1172	-643.4	P on log	LP-ADR	1172	-643.4
72123	1175	-631.5	P on log	LP-ADR	1175	-631.5
74160	786	-197.2	P on log	LP-ADR	786	-197.2
75341	200	331.2	P on log	LP-ADR	200	331.2
75437	1152	-602.7	P on log	LP-ADR	1152	-602.7
76317	660	-128.9	P	DP-FMRP	660	-128.9
76798	650	-111.3	P on log	LP-ADR	650	-111.3
77043	920	-326.3	P on log	LP-ADR	920	-326.3
77871	590	-89.9	P on log	LP-ADR	590	-89.9
77995	966	-500.3	P on log	LP-ADR	966	-500.3
78566	518	42.5	P on log	LP-ADR	518	42.5
78573	1260	-681.9	P on log	LP-ADR	1260	-681.9
79583	949	-449.8	P on log	LP-ADR	949	-449.8
80622	1104	-372.9	P on log	LP-ADR	1104	-372.9
80871	647	-73.5	P on log	LP-ADR	647	-73.5
81073	652	-79	P on log	LP-ADR	652	-79
81187	515	25.7	P	DP-FMRP	515	25.7
81188	531	20	P on log	LP-ADR	531	20
81454	838	-230	P on log	LP-ADR	838	-230
81821	655	-93.1	P on log	LP-ADR	655	-93.1
82547	188	465.9	P on log	LP-ADR	188	465.9
82646	314	396.7	P on log	LP-ADR	314	396.7

82869	1226	-579.8	P on log	LP-ADR	1226	-579.8
82961	126	575.8	P on log	LP-ADR	126	575.8
83200	1109	-498.6	P on log	LP-ADR	1109	-498.6
83643	1077	-475.7	P on log	LP-ADR	1077	-475.7
84897	1238	-651.5	P on log	LP-ADR	1238	-651.5
85857	1019	-281.9	P on log	LP-ADR	1019	-281.9
KGS REC	T1_NAS_t	T1_SS	T1_pres	T1_src	T1_ana_MD	T1_ana_SS
85898	1316	-617.5	P on log	LP-ADR	1316	-617.5
86110	216	639.3	P	DP-FMRP	216	639.3
86659	750	-212	P	DP-FMRP	750	-212
87133	723	-173.9	P on log	LP-ADR	723	-173.9
87342	657	44.3	P on log	LP-ADR	657	44.3
87691	1157	-527.7	P on log	LP-ADR	1157	-527.7
88126	1955	-1442.6	P on log	LP-ADR	1955	-1442.6
88310	339	268.1	P on log	LP-ADR	339	268.1
88519	448	272.4	P on log	LP-ADR	448	272.4
88720	1359	-841.3	P on log	LP-ADR	1359	-841.3
88824	1557	-1064.5	P on log	LP-ADR	1557	-1064.5
89627	980	-455.8	P	DP-FMRP	980	-455.8
89864	1740	-1320.9	P	DP-FMRP	1740	-1320.9
89887	2475	-2074.6	P	DP-FMRP	2475	-2074.6
89889	2430	-2030.4	P	DP-FMRP	2430	-2030.4
90181	1085	-510.2	P on log	LP-ADR	1085	-510.2
91075	1995	-1559.2	P	DP-FMRP	1995	-1559.2
92068	445	275.4	P on log	LP-ADR	445	275.4
92622	386	169.5	P on log	LP-ADR	386	169.5
93190	328	352.6	P on log	LP-ADR	328	352.6
93217	879	-132.5	P on log	LP-ADR	879	-132.5
100378	1153	-521.9	P on log	LP-ADR	1153	-521.9
101078	425	142.6	P on log	LP-ADR	425	142.6
101580	790	-275.1	P on log	LP-ADR	790	-275.1
101593	1516	-1068	P on log	LP-ADR	1516	-1068
101596	1067	-474.9	P on log	LP-ADR	1067	-474.9
101599	1800	-1061.5	P on log	LP-ADR	1800	-1061.5
101654	302.2	256.7	P on log	LP-ADR	302.2	256.7
101660	840	-181.2	P on log	LP-ADR	840	-181.2
101732	618	-46.2	P on log	LP-ADR	618	-46.2
101733	938	-415.3	P on log	LP-ADR	938	-415.3
102191	508	34.4	P on log	LP-ADR	508	34.4
102215	431	132	P on log	LP-ADR	431	132
102491	1343	-770.4	P on log	LP-ADR	1343	-770.4
102827	2334	-1877.9	P on log	LP-ADR	2334	-1877.9

103416	550	69.6	P on log	LP-ADR	550	69.6
103481	1244	-374.3	P on log	LP-ADR	1244	-374.3
103599	1346	-907	P on log	LP-ADR	1346	-907
104457	693	-128.9	P on log	LP-ADR	693	-128.9
104458	597	-4.5	P on log	LP-ADR	597	-4.5
104459	991	-196.5	P on log	LP-ADR	991	-196.5
KGS REC	T1_NAS_t	T1_SS	T1_pres	T1_src	T1_ana_MD	T1_ana_SS
104629	2330	-1873.9	P on log	LP-ADR	2330	-1873.9
105693	796	-197.7	P on log	LP-ADR	796	-197.7
105694	429	222.8	P on log	LP-ADR	429	222.8
106588	156	571.2	P on log	LP-ADR	156	571.2
107711	905	-300.2	P on log	LP-ADR	905	-300.2
107951	1499	-912.5	P on log	LP-ADR	1499	-912.5
108682	1169	-516.3	P on log	LP-ADR	1169	-516.3
108819	1182	-495.4	P on log	LP-ADR	1182	-495.4
109059	1140	-527.4	P on log	LP-ADR	1140	-527.4
109085	1068	-429.1	P on log	LP-ADR	1068	-429.1
109279	1504	-970.8	P on log	LP-ADR	1504	-970.8
109338	1070	-490.4	P on log	LP-ADR	1070	-490.4
109440	1127	-501	P on log	LP-ADR	1127	-501
109472	1122	-507.6	P on log	LP-ADR	1122	-507.6
109556	1322	-754.5	P on log	LP-ADR	1322	-754.5
109750	1128	-552.7	P on log	LP-ADR	1128	-552.7
109818	3226	-2756.7	P on log	LP-ADR	3226	-2756.7
110720	1227	-363.2	P on log	LP-ADR	1227	-363.2
110810	1089	-485.9	P on log	LP-ADR	1089	-485.9
110873	1117	-419.3	P on log	LP-ADR	1117	-419.3
111111	1683	-1043.3	P on log	LP-ADR	1683	-1043.3
111317	1115	-500.2	P on log	LP-ADR	1115	-500.2
111535	1329	-716.4	P on log	LP-ADR	1329	-716.4
111582	1086	-461.5	P on log	LP-ADR	1086	-461.5
111583	1106	-517.3	P on log	LP-ADR	1106	-517.3
111698	1149	-439.6	P	DP-FMRP	1149	-439.6
111711	1293	-618.3	P on log	LP-ADR	1293	-618.3
111826	1080	-379.9	P on log	LP-ADR	1080	-379.9
111833	1090	-556.6	P on log	LP-ADR	1090	-556.6
111866	1590	-1166.3	P on log	LP-ADR	1590	-1166.3
112219	1226	-700.9	P on log	LP-ADR	1226	-700.9
112229	1887	-1265.5	P	DP-FMRP	1887	-1265.5
112277	1114.9	-471	P on log	LP-ADR	1114.9	-471
112288	1595	-961.3	P on log	LP-ADR	1595	-961.3
112435	1030	-369.8	P on log	LP-ADR	1030	-369.8

112764	1054	-334.2	P on log	LP-ADR	1054	-334.2
113002	1142	-390.7	P on log	LP-ADR	1142	-390.7
113076	1648	-952.3	P on log	LP-ADR	1648	-952.3
113543	1195	-307.8	P on log	LP-ADR	1195	-307.8
113949	1335	-524.4	P on log	LP-ADR	1335	-524.4
114144	1306	-624.3	P on log	LP-ADR	1306	-624.3
KGS REC	T1_NAS_t	T1_SS	T1_pres	T1_src	T1_ana_MD	T1_ana_SS
114292	1778.8	-1106.5	P on log	LP-ADR	1778.8	-1106.5
114341	1168	-465.2	P on log	LP-ADR	1168	-465.2
114661	2385	-1954.5	P on log	LP-ADR	2385	-1954.5
115223	1256	-493.1	P on log	LP-ADR	1256	-493.1
115312	1553	-757	P on log	LP-ADR	1553	-757
115429	1544	-1003	P on log	LP-ADR	1544	-1003
120335	201	465.9	P on log	LP-ADR	201	465.9
120748	1060	-442.6	P on log	LP-ADR	1060	-442.6
121349	965	-299.6	P on log	LP-ADR	965	-299.6
121595	1301	-631.3	P on log	LP-ADR	1301	-631.3
122123	1050	-382.4	P on log	LP-ADR	1050	-382.4
123053	702	-172	P on log	LP-ADR	702	-172
123336	872	-185	P on log	LP-ADR	872	-185
123654	1754	-1052.2	P on log	LP-ADR	1754	-1052.2
123757	1593	-1075.2	P on log	LP-ADR	1593	-1075.2
124339	1866	-1123	P on log	LP-ADR	1866	-1123
124491	1792	-1083.3	P on log	LP-ADR	1792	-1083.3
124493	1747	-1129.8	P on log	LP-ADR	1747	-1129.8
124522	1731	-1004.5	P on log	LP-ADR	1731	-1004.5
124524	1600	-1107.7	P on log	LP-ADR	1600	-1107.7
124638	1770	-1060.8	P on log	LP-ADR	1770	-1060.8
125043	1083	-384.4	P on log	LP-ADR	1083	-384.4
125506	1002	-149.5	P on log	LP-ADR	1002	-149.5
125635	580	52.5	P	DP-FMRP	580	52.5
125769	1024	-259.7	P on log	LP-ADR	1024	-259.7
126005	1045	-387.2	P on log	LP-ADR	1045	-387.2
126648	763	-176.3	P on log	LP-ADR	763	-176.3
126649	1050	-345.1	P on log	LP-ADR	1050	-345.1
126650	1084	-421.4	P on log	LP-ADR	1084	-421.4
126810	920	-104.7	P on log	LP-ADR	920	-104.7
127044	1029	-257.8	P on log	LP-ADR	1029	-257.8
127048	968	-177.5	P on log	LP-ADR	968	-177.5
127228	1915	-1292.4	P on log	LP-ADR	1915	-1292.4
127229	2086	-1638.7	P on log	LP-ADR	2086	-1638.7
127242	786	-139.1	P on log	LP-ADR	786	-139.1

127243	1027	-265.9	P on log	LP-ADR	1027	-265.9
127304	2414	-1793	P on log	LP-ADR	2414	-1793
128673	2610	-2224.7	P on log	LP-ADR	2610	-2224.7
128777	1446	-899.9	P on log	LP-ADR	1446	-899.9
129065	1818.8	-1172.6	P	DP-FMRP	1818.8	-1172.6
129425	2382	-1950.3	P on log	LP-ADR	2382	-1950.3
KGS REC	T1_NAS_t	T1_SS	T1_pres	T1_src	T1_ana_MD	T1_ana_SS
129907	1964	-1344.1	P on log	LP-ADR	1964	-1344.1
129908	1972	-1401.9	P on log	LP-ADR	1972	-1401.9
129973	2040	-1440.9	P on log	LP-ADR	2040	-1440.9
130060	1770	-1329.5	P on log	LP-ADR	1770	-1329.5
130135	1464	-745.9	P on log	LP-ADR	1464	-745.9
131875	610	-15.8	P on log	LP-ADR	610	-15.8
132142	2585	-2033	P on log	LP-ADR	2585	-2033
132143	2537	-2034.4	P on log	LP-ADR	2537	-2034.4
132325	652	-34.9	P on log	LP-ADR	652	-34.9
132326	617	-3.1	P on log	LP-ADR	617	-3.1
132327	606	-37.2	P on log	LP-ADR	606	-37.2
132433	2479	-2059.4	P on log	LP-ADR	2479	-2059.4
133831	323	127.1	P on log	LP-ADR	323	127.1
134591	920	-324.8	P on log	LP-ADR	920	-324.8
134670	1580	-1117.3	P on log	LP-ADR	1580	-1117.3
135644	1029	-271.7	P on log	LP-ADR	1029	-271.7
135647	1119	-414.7	P on log	LP-ADR	1119	-414.7
136312	1027	-495.3	P on log	LP-ADR	1027	-495.3
136624	681	-101.6	P on log	LP-ADR	681	-101.6
136630	3272	-2812	P on log	LP-ADR	3272	-2812
136631	3300	-2865.9	P on log	LP-ADR	3300	-2865.9
137175	1408	-915.9	P on log	LP-ADR	1408	-915.9
137356	1028	-424.4	P on log	LP-ADR	1028	-424.4
137575	728	-115.1	P on log	LP-ADR	728	-115.1
137576	721	-85.5	P on log	LP-ADR	721	-85.5
138273	1218	-633.1	P on log	LP-ADR	1218	-633.1
138396	1198	-621.5	P on log	LP-ADR	1198	-621.5
138644	2009	-1456.9	P on log	LP-ADR	2009	-1456.9
139171	2024	-1528.7	P on log	LP-ADR	2024	-1528.7
141283	1162	-699.7	P on log	LP-ADR	1162	-699.7
141285	1089	-506.2	P on log	LP-ADR	1089	-506.2
143084	2683	-2196.1	P on log	LP-ADR	2683	-2196.1
2000111	170	594.9	P	DP-FMRP	170	594.9
2029993	2230	-1619.3	P on log	LP-ADR	2230	-1619.3
2030235	214	539.9	P on log	LP-ADR	214	539.9

2037542	700	-57.4	P	DP-FMRP	700	-57.4
2037613	488	242.2	P	DP-FMRP	488	242.2
2037770	842	-158.9	P	DP-FMRP	842	-158.9
2039921	262.7	245.8	P on log	LP-ADR	262.7	245.8
2040109	980	-341.8	P	DP-FMRP	980	-341.8
2040429	397.7	305.1	P on log	LP-ADR	397.7	305.1
KGS REC	T1_NAS_t	T1_SS	T1_pres	T1_src	T1_ana_MD	T1_ana_SS
2040433	1273	-670.4	P on log	LP-ADR	1273	-670.4
2040888	1601	-1181	P on log	LP-ADR	1601	-1181
2042187	454.3	174.9	P on log	LP-ADR	454.3	174.9

KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_MD	T2_ana_SS
1360	263.00	305.60	P on log	LP-ADR	263	305.6
1561	182.00	427.70	P on log	LP-ADR	182	427.7
1612	368.00	200.70	P on log	LP-ADR	368	200.7
1647	389.00	243.00	P on log	LP-ADR	389	243
1677	333.00	347.50	P on log	LP-ADR	333	347.5
2089	327.00	368.90	P on log	LP-ADR	327	368.9
2182	565.00	138.80	P on log	LP-ADR	565	138.8
2183	632.00	35.60	P on log	LP-ADR	632	35.6
2619	1460.00	-964.80	P on log	LP-ADR	1460	-964.8
2626	1706.00	-1257.90	P on log	LP-ADR	1706	-1257.9
2627	2900.00	-2491.00	P on log	LP-ADR	2900	-2491
2628	2846.00	-2424.30	P on log	LP-ADR	2846	-2424.3
2631	1982.00	-1296.90	P on log	LP-ADR	1982	-1296.9
8245	556.00	80.50	P on log	LP-ADR	556	80.5
8247	608.00	43.90	P on log	LP-ADR	608	43.9
8249	1149.00	-569.60	P on log	LP-ADR	1149	-569.6
8254	1380.00	-762.00	P on log	LP-ADR	1380	-762
8255	-9999.25	-9999.25	N/A	IC-N/A	1272.599	-764.599
8268	1574.00	-811.30	P	DP-ADR	1574	-811.3
8288	1632.00	-1120.00	P on log	LP-ADR	1632	-1120
8840	1601.00	-1017.10	P	DP-FMRP	1601	-1017.1
8852	1665.00	-1081.30	P	DP-FMRP	1665	-1081.3
8853	-9999.25	-9999.25	N/A	IC-N/A	1693.72	-1131.32
8856	1900.00	-1162.10	P on log	LP-ADR	1900	-1162.1
8870	1899.00	-1157.50	P	DP-ADR	1899	-1157.5
8884	-9999.25	-9999.25	N/A	IC-N/A	1933.971	-1192.171
8922	-9999.25	-9999.25	N/A	IC-N/A	1485.914	-946.214
8929	1667.00	-963.60	P on log	LP-ADR	1667	-963.6
8931	1663.00	-956.90	P on log	LP-ADR	1663	-956.9

8942	1671.00	-999.10	P on log	LP-ADR	1671	-999.1
8949	1736.00	-1042.20	P on log	LP-ADR	1736	-1042.2
8950	-9999.25	-9999.25	N/A	IC-N/A	1733.085	-1033.785
8966	1629.00	-901.10	P on log	LP-ADR	1629	-901.1
8970	1485.00	-878.90	P on log	LP-ADR	1485	-878.9
8974	1692.00	-1001.60	P on log	LP-ADR	1692	-1001.6
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
8979	1478.00	-904.40	P on log	LP-ADR	1478	-904.4
8985	1120.00	-466.10	P on log	LP-ADR	1120	-466.1
9892	1010.00	-392.10	P on log	LP-ADR	1010	-392.1
9948	860.00	-347.50	P on log	LP-ADR	860	-347.5
10018	996.00	-444.00	P on log	LP-ADR	996	-444
10037	858.00	-205.30	P on log	LP-ADR	858	-205.3
12499	783.00	-251.50	P on log	LP-ADR	783	-251.5
12520	1148.00	-525.30	P on log	LP-ADR	1148	-525.3
12534	1097.00	-392.50	P	DP-FMRP	1097	-392.5
12535	1030.00	-364.30	P	DP-FMRP	1030	-364.3
12557	1024.00	-364.10	P	DP-FMRP	1024	-364.1
12581	1203.00	-567.10	P on log	LP-ADR	1203	-567.1
12585	1165.00	-585.00	P on log	LP-ADR	1165	-585
12588	1327.00	-612.20	P on log	LP-ADR	1327	-612.2
12589	1313.00	-587.20	P on log	LP-ADR	1313	-587.2
12611	1992.00	-1239.70	P	DP-FMRP	1992	-1239.7
12623	-9999.25	-9999.25	N/A	IC-N/A	1708.594	-1221.894
12632	1710.00	-1219.70	P on log	LP-ADR	1710	-1219.7
12659	1434.00	-744.20	P on log	LP-ADR	1434	-744.2
16942	970.00	-281.50	P	DP-FMRP	970	-281.5
16946	543.00	116.30	P	DP-FMRP	543	116.3
16951	527.00	97.20	P on log	LP-ADR	527	97.2
17423	262.00	218.50	P on log	LP-ADR	262	218.5
17428	1047.00	-514.30	P on log	LP-ADR	1047	-514.3
17448	898.00	-321.70	P on log	LP-ADR	898	-321.7
17470	588.00	-109.60	P on log	LP-ADR	588	-109.6
17473	583.00	-39.00	P on log	LP-ADR	583	-39
17494	1336.00	-698.70	P on log	LP-ADR	1336	-698.7
17496	1375.00	-741.60	P on log	LP-ADR	1375	-741.6
17550	826.00	-367.50	P on log	LP-ADR	826	-367.5
17582	606.00	43.10	P on log	LP-ADR	606	43.1
17588	1771.00	-1361.30	P on log	LP-ADR	1771	-1361.3
17592	1438.00	-845.10	P on log	LP-ADR	1438	-845.1
17660	1200.00	-582.90	P on log	LP-ADR	1200	-582.9
17687	1146.00	-538.60	P on log	LP-ADR	1146	-538.6

18752	3416.00	-2921.60	P	DP-FMRP	3416	-2921.6
21277	310.00	486.40	P on log	LP-ADR	310	486.4
21322	392.00	377.80	P on log	LP-ADR	392	377.8
22861	1102.00	-539.30	P on log	LP-ADR	1102	-539.3
23475	1238.00	-619.10	P on log	LP-ADR	1238	-619.1
23477	1078.00	-390.90	P on log	LP-ADR	1078	-390.9
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
24414	460.00	112.00	P on log	LP-ADR	460	112
24513	819.00	-195.40	P on log	LP-ADR	819	-195.4
24518	532.00	33.80	P on log	LP-ADR	532	33.8
24520	412.00	194.30	P on log	LP-ADR	412	194.3
24533	1278.00	-646.40	P on log	LP-ADR	1278	-646.4
24862	1134.00	-456.00	P on log	LP-ADR	1134	-456
24878	335.00	250.30	P on log	LP-ADR	335	250.3
24985	1176.00	-533.40	P on log	LP-ADR	1176	-533.4
24987	1180.00	-532.90	P on log	LP-ADR	1180	-532.9
25006	1240.00	-581.60	P on log	LP-ADR	1240	-581.6
25007	426.00	238.00	P on log	LP-ADR	426	238
25065	308.00	322.20	P on log	LP-ADR	308	322.2
25165	2232.00	-1623.30	P on log	LP-ADR	2232	-1623.3
26194	600.00	89.30	P on log	LP-ADR	600	89.3
26231	1690.00	-1205.50	P on log	LP-ADR	1690	-1205.5
26540	-9999.25	-9999.25	N/A	IC-N/A	1853.561	-1412.161
26541	1785.00	-1373.80	P on log	LP-ADR	1785	-1373.8
26542	1872.00	-1264.90	P on log	LP-ADR	1872	-1264.9
26543	-9999.25	-9999.25	N/A	IC-N/A	2006.83	-1349.53
26544	-9999.25	-9999.25	N/A	IC-N/A	2060.193	-1396.793
26549	657.00	-15.00	P on log	LP-ADR	657	-15
26609	905.00	-342.90	P on log	LP-ADR	905	-342.9
26970	1182.00	-660.40	P on log	LP-ADR	1182	-660.4
27009	-9999.25	-9999.25	N/A	IC-N/A	1749.38	-1210.58
27145	1088.00	-470.30	P on log	LP-ADR	1088	-470.3
27146	1254.00	-653.50	P	DP-FMRP	1254	-653.5
27367	1277.00	-693.60	P on log	LP-ADR	1277	-693.6
27852	784.00	-173.50	P	DP-FMRP	784	-173.5
28285	1283.00	-620.00	P on log	LP-ADR	1283	-620
28442	-9999.25	-9999.25	N/A	IC-N/A	1667.137	-983.137
28447	1684.00	-984.90	P on log	LP-ADR	1684	-984.9
28458	1474.00	-940.70	P on log	LP-ADR	1474	-940.7
28470	1634.00	-900.00	P on log	LP-ADR	1634	-900
29044	1068.00	-569.70	P on log	LP-ADR	1068	-569.7
29071	1257.00	-579.20	P on log	LP-ADR	1257	-579.2

29102	1256.00	-665.20	P on log	LP-ADR	1256	-665.2
30067	652.00	11.90	P on log	LP-ADR	652	11.9
30090	1696.00	-1217.60	P on log	LP-ADR	1696	-1217.6
30092	1042.00	-444.50	P on log	LP-ADR	1042	-444.5
30117	729.00	-244.50	P on log	LP-ADR	729	-244.5
30118	989.00	-388.40	P on log	LP-ADR	989	-388.4
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
30483	489.00	145.50	P on log	LP-ADR	489	145.5
30670	1327.00	-780.60	P on log	LP-ADR	1327	-780.6
30794	-9999.25	-9999.25	N/A	IC-N/A	1949.625	-1185.525
30795	1730.00	-1195.20	P on log	LP-ADR	1730	-1195.2
30824	221.00	600.10	P on log	LP-ADR	221	600.1
31005	280.00	430.10	P on log	LP-ADR	280	430.1
31018	1707.00	-1204.80	P on log	LP-ADR	1707	-1204.8
31120	284.00	472.90	P on log	LP-ADR	284	472.9
31264	1318.00	-837.70	P on log	LP-ADR	1318	-837.7
31394	873.00	-256.10	P on log	LP-ADR	873	-256.1
32126	881.00	-378.40	P on log	LP-ADR	881	-378.4
32468	969.00	-368.50	P on log	LP-ADR	969	-368.5
32641	338.00	296.20	P on log	LP-ADR	338	296.2
32959	244.00	405.50	P on log	LP-ADR	244	405.5
33057	642.00	-17.70	P on log	LP-ADR	642	-17.7
33896	1314.00	-645.80	P on log	LP-ADR	1314	-645.8
34176	1184.00	-571.90	P on log	LP-ADR	1184	-571.9
34251	1180.00	-662.50	P on log	LP-ADR	1180	-662.5
34413	296.00	235.20	P on log	LP-ADR	296	235.2
34743	1216.00	-662.60	P on log	LP-ADR	1216	-662.6
35139	854.00	-405.20	P on log	LP-ADR	854	-405.2
35370	1165.00	-407.60	P on log	LP-ADR	1165	-407.6
36020	1149.00	-516.60	P on log	LP-ADR	1149	-516.6
36251	-9999.25	-9999.25	N/A	IC-N/A	1669.664	-1146.664
36373	-9999.25	-9999.25	N/A	IC-N/A	1703.713	-1187.913
36411	1407.00	-790.10	P on log	LP-ADR	1407	-790.1
36701	1087.00	-536.90	P on log	LP-ADR	1087	-536.9
37056	598.00	10.60	P on log	LP-ADR	598	10.6
37057	543.00	44.10	P on log	LP-ADR	543	44.1
37064	454.00	107.80	P on log	LP-ADR	454	107.8
37649	870.00	-432.00	P on log	LP-ADR	870	-432
37651	1029.00	-492.40	P on log	LP-ADR	1029	-492.4
37710	891.00	-416.40	P on log	LP-ADR	891	-416.4
37719	982.00	-416.20	P on log	LP-ADR	982	-416.2
37826	1141.00	-721.00	P on log	LP-ADR	1141	-721

38267	884.00	-303.80	P on log	LP-ADR	884	-303.8
38274	883.00	-329.20	P on log	LP-ADR	883	-329.2
38322	-9999.25	-9999.25	N/A	IC-N/A	1873.735	-1144.635
38426	181.00	508.10	P on log	LP-ADR	181	508.1
38932	1310.00	-762.60	P on log	LP-ADR	1310	-762.6
41548	-9999.25	-9999.25	N/A	IC-N/A	1720.38	-1172.48
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
41592	-9999.25	-9999.25	N/A	IC-N/A	1695.021	-1189.521
41615	1132.00	-486.80	P on log	LP-ADR	1132	-486.8
41696	508.00	76.70	P on log	LP-ADR	508	76.7
41697	475.00	96.30	P on log	LP-ADR	475	96.3
41725	685.00	-45.90	P on log	LP-ADR	685	-45.9
41810	672.00	-81.60	P on log	LP-ADR	672	-81.6
41947	431.00	157.80	P on log	LP-ADR	431	157.8
42211	1180.00	-555.70	P on log	LP-ADR	1180	-555.7
42252	442.00	149.30	P on log	LP-ADR	442	149.3
42524	456.00	105.20	P on log	LP-ADR	456	105.2
43185	322.00	379.40	P on log	LP-ADR	322	379.4
43186	263.00	367.80	P on log	LP-ADR	263	367.8
43551	1967.00	-1242.20	P on log	LP-ADR	1967	-1242.2
43567	-9999.25	-9999.25	N/A	IC-N/A	1859.118	-1208.318
43875	1026.00	-421.40	P on log	LP-ADR	1026	-421.4
43976	472.00	143.70	P on log	LP-ADR	472	143.7
43985	962.00	-312.10	P on log	LP-ADR	962	-312.1
44002	787.00	-169.10	P on log	LP-ADR	787	-169.1
44194	1440.00	-927.40	P on log	LP-ADR	1440	-927.4
44391	1106.00	-373.80	P on log	LP-ADR	1106	-373.8
44511	2907.00	-2473.60	P on log	LP-ADR	2907	-2473.6
44554	339.00	418.10	P on log	LP-ADR	339	418.1
44735	1248.00	-663.90	P on log	LP-ADR	1248	-663.9
44743	446.00	283.70	P on log	LP-ADR	446	283.7
44795	889.00	-456.20	P on log	LP-ADR	889	-456.2
44796	782.00	-294.50	P on log	LP-ADR	782	-294.5
44820	1190.00	-520.70	P on log	LP-ADR	1190	-520.7
44831	570.00	101.00	P on log	LP-ADR	570	101
44884	905.00	-475.20	P on log	LP-ADR	905	-475.2
44890	1250.00	-559.40	P on log	LP-ADR	1250	-559.4
44938	524.00	73.60	P on log	LP-ADR	524	73.6
44942	544.00	58.80	P on log	LP-ADR	544	58.8
44957	627.00	-86.90	P on log	LP-ADR	627	-86.9
44962	1586.00	-866.70	P on log	LP-ADR	1586	-866.7
44964	1336.00	-762.60	P on log	LP-ADR	1336	-762.6

44966	548.00	37.50	P on log	LP-ADR	548	37.5
45406	1102.00	-429.00	P on log	LP-ADR	1102	-429
45408	1054.00	-483.00	P on log	LP-ADR	1054	-483
45607	1603.00	-899.10	P on log	LP-ADR	1603	-899.1
45907	1054.00	-474.80	P on log	LP-ADR	1054	-474.8
46168	1948.00	-1240.70	P on log	LP-ADR	1948	-1240.7
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
46193	1731.00	-1218.90	P on log	LP-ADR	1731	-1218.9
46768	1962.00	-1258.00	P on log	LP-ADR	1962	-1258
46770	1156.00	-521.50	P on log	LP-ADR	1156	-521.5
46810	888.00	-291.50	P on log	LP-ADR	888	-291.5
47882	243.00	557.10	P	DP-FMRP	243	557.1
47936	1965.00	-1241.60	P	DP-FMRP	1965	-1241.6
48080	3405.00	-2933.50	P	DP-FMRP	3405	-2933.5
48511	1177.00	-386.60	P on log	LP-ADR	1177	-386.6
48678	492.00	119.00	P on log	LP-ADR	492	119
48712	963.00	-415.00	P on log	LP-ADR	963	-415
48915	1170.00	-726.40	P on log	LP-ADR	1170	-726.4
49185	891.00	-382.10	P on log	LP-ADR	891	-382.1
49529	835.00	-245.40	P on log	LP-ADR	835	-245.4
50331	1192.00	-542.50	P on log	LP-ADR	1192	-542.5
50333	1175.00	-547.50	P on log	LP-ADR	1175	-547.5
50439	917.00	-128.70	P on log	LP-ADR	917	-128.7
50832	595.00	178.10	P on log	LP-ADR	595	178.1
50878	162.00	568.90	P on log	LP-ADR	162	568.9
51143	222.00	442.60	P on log	LP-ADR	222	442.6
51478	1762.00	-1247.20	P on log	LP-ADR	1762	-1247.2
51636	1094.00	-447.30	P on log	LP-ADR	1094	-447.3
53626	796.00	-184.20	P on log	LP-ADR	796	-184.2
53903	1092.00	-413.50	P on log	LP-ADR	1092	-413.5
54301	2551.00	-2142.90	P on log	LP-ADR	2551	-2142.9
54921	1314.00	-625.00	P	DP-DRRP	1314	-625
55626	899.00	-406.10	P on log	LP-ADR	899	-406.1
57212	1600.00	-923.90	P on log	LP-ADR	1600	-923.9
57253	1216.00	-476.30	P on log	LP-ADR	1216	-476.3
57369	1566.00	-821.80	P on log	LP-ADR	1566	-821.8
57470	1270.00	-602.70	P on log	LP-ADR	1270	-602.7
57726	1132.00	-440.40	P on log	LP-ADR	1132	-440.4
57764	478.00	179.60	P on log	LP-ADR	478	179.6
58703	209.00	572.70	P on log	LP-ADR	209	572.7
59328	1500.00	-869.30	P on log	LP-ADR	1500	-869.3
60392	1574.00	-891.70	P on log	LP-ADR	1574	-891.7

60463	352.00	310.80	P on log	LP-ADR	352	310.8
60620	2097.00	-1559.90	P on log	LP-ADR	2097	-1559.9
60647	1210.00	-438.10	P on log	LP-ADR	1210	-438.1
60784	2520.00	-2102.90	P on log	LP-ADR	2520	-2102.9
61104	610.00	-29.50	P on log	LP-ADR	610	-29.5
61708	154.00	565.30	P on log	LP-ADR	154	565.3
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
61894	2306.00	-1749.70	P on log	LP-ADR	2306	-1749.7
61911	232.00	447.80	P on log	LP-ADR	232	447.8
64431	477.00	220.90	P on log	LP-ADR	477	220.9
64550	-9999.25	-9999.25	N/A	IC-N/A	1572.963	-1143.663
64561	860.00	-206.00	P on log	LP-ADR	860	-206
64699	1300.00	-707.20	P on log	LP-ADR	1300	-707.2
65374	1680.00	-1125.50	P on log	LP-ADR	1680	-1125.5
66140	816.00	-158.30	P on log	LP-ADR	816	-158.3
66243	433.00	167.20	P on log	LP-ADR	433	167.2
66398	933.00	-474.70	P on log	LP-ADR	933	-474.7
66515	1377.00	-754.50	P on log	LP-ADR	1377	-754.5
67124	316.00	323.80	P on log	LP-ADR	316	323.8
67275	974.00	-518.30	P on log	LP-ADR	974	-518.3
68018	1210.00	-642.00	P on log	LP-ADR	1210	-642
69043	1101.00	-581.20	P on log	LP-ADR	1101	-581.2
69391	972.00	-355.00	P on log	LP-ADR	972	-355
70030	1000.00	-476.70	P on log	LP-ADR	1000	-476.7
70521	861.00	-260.50	P on log	LP-ADR	861	-260.5
70700	1074.00	-632.30	P on log	LP-ADR	1074	-632.3
71650	1276.00	-747.40	P on log	LP-ADR	1276	-747.4
72123	1292.00	-748.50	P on log	LP-ADR	1292	-748.5
74160	853.00	-264.20	P on log	LP-ADR	853	-264.2
75341	250.00	281.20	P on log	LP-ADR	250	281.2
75437	1245.00	-695.70	P on log	LP-ADR	1245	-695.7
76317	-9999.25	-9999.25	N/A	IC-N/A	725.9416	-194.8416
76798	720.00	-181.30	P on log	LP-ADR	720	-181.3
77043	998.00	-404.30	P on log	LP-ADR	998	-404.3
77871	-9999.25	-9999.25	N/A	IC-N/A	650.5627	-150.4627
77995	1064.00	-598.30	P on log	LP-ADR	1064	-598.3
78566	573.00	-12.50	P on log	LP-ADR	573	-12.5
78573	1365.00	-786.90	P on log	LP-ADR	1365	-786.9
79583	1037.00	-537.80	P on log	LP-ADR	1037	-537.8
80622	1186.00	-454.90	P on log	LP-ADR	1186	-454.9
80871	720.00	-146.50	P on log	LP-ADR	720	-146.5
81073	718.00	-145.00	P on log	LP-ADR	718	-145

81187	-9999.25	-9999.25	N/A	IC-N/A	569.9007	-29.2007
81188	-9999.25	-9999.25	N/A	IC-N/A	585.6044	-34.6044
81454	919.00	-311.00	P on log	LP-ADR	919	-311
81821	712.00	-150.10	P on log	LP-ADR	712	-150.1
82547	240.00	413.90	P on log	LP-ADR	240	413.9
82646	364.00	346.70	P on log	LP-ADR	364	346.7
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
82869	1326.00	-679.80	P on log	LP-ADR	1326	-679.8
82961	172.00	529.80	P on log	LP-ADR	172	529.8
83200	1206.00	-595.60	P on log	LP-ADR	1206	-595.6
83643	1176.00	-574.70	P on log	LP-ADR	1176	-574.7
84897	1338.00	-751.50	P on log	LP-ADR	1338	-751.5
85857	1097.00	-359.90	P on log	LP-ADR	1097	-359.9
85898	1408.00	-709.50	P on log	LP-ADR	1408	-709.5
86110	255.00	600.30	P	DP-FMRP	255	600.3
86659	825.00	-287.00	P	DP-FMRP	825	-287
87133	794.00	-244.90	P on log	LP-ADR	794	-244.9
87342	718.00	-16.70	P on log	LP-ADR	718	-16.7
87691	1260.00	-630.70	P on log	LP-ADR	1260	-630.7
88126	2116.00	-1603.60	P on log	LP-ADR	2116	-1603.6
88310	390.00	217.10	P on log	LP-ADR	390	217.1
88519	499.00	221.40	P on log	LP-ADR	499	221.4
88720	1469.00	-951.30	P on log	LP-ADR	1469	-951.3
88824	1676.00	-1183.50	P on log	LP-ADR	1676	-1183.5
89627	1080.00	-555.80	P	DP-FMRP	1080	-555.8
89864	1875.00	-1455.90	P	DP-FMRP	1875	-1455.9
89887	2668.00	-2267.60	P	DP-FMRP	2668	-2267.6
89889	2645.00	-2245.40	P	DP-FMRP	2645	-2245.4
90181	1174.00	-599.20	P on log	LP-ADR	1174	-599.2
91075	2148.00	-1712.20	P	DP-FMRP	2148	-1712.2
92068	500.00	220.40	P on log	LP-ADR	500	220.4
92622	440.00	115.50	P on log	LP-ADR	440	115.5
93190	382.00	298.60	P on log	LP-ADR	382	298.6
93217	948.00	-201.50	P on log	LP-ADR	948	-201.5
100378	1248.00	-616.90	P on log	LP-ADR	1248	-616.9
101078	481.00	86.60	P on log	LP-ADR	481	86.6
101580	863.00	-348.10	P on log	LP-ADR	863	-348.1
101593	1672.00	-1224.00	P on log	LP-ADR	1672	-1224
101596	1170.00	-577.90	P on log	LP-ADR	1170	-577.9
101599	-9999.25	-9999.25	N/A	IC-N/A	1960.813	-1222.313
101654	354.00	204.90	P on log	LP-ADR	354	204.9
101660	914.00	-255.20	P on log	LP-ADR	914	-255.2

101732	691.00	-119.20	P on log	LP-ADR	691	-119.2
101733	1026.00	-503.30	P on log	LP-ADR	1026	-503.3
102191	566.00	-23.60	P on log	LP-ADR	566	-23.6
102215	485.00	78.00	P on log	LP-ADR	485	78
102491	1453.00	-880.40	P on log	LP-ADR	1453	-880.4
102827	2495.00	-2038.90	P on log	LP-ADR	2495	-2038.9
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
103416	619.00	0.60	P on log	LP-ADR	619	0.6
103481	1314.00	-444.30	P on log	LP-ADR	1314	-444.3
103599	1452.00	-1013.00	P on log	LP-ADR	1452	-1013
104457	760.00	-195.90	P on log	LP-ADR	760	-195.9
104458	662.00	-69.50	P on log	LP-ADR	662	-69.5
104459	1060.00	-265.50	P on log	LP-ADR	1060	-265.5
104629	2490.00	-2033.90	P on log	LP-ADR	2490	-2033.9
105693	864.00	-265.70	P on log	LP-ADR	864	-265.7
105694	484.00	167.80	P on log	LP-ADR	484	167.8
106588	202.00	525.20	P on log	LP-ADR	202	525.2
107711	973.00	-368.20	P on log	LP-ADR	973	-368.2
107951	1611.00	-1024.50	P on log	LP-ADR	1611	-1024.5
108682	1262.00	-609.30	P on log	LP-ADR	1262	-609.3
108819	1272.00	-585.40	P on log	LP-ADR	1272	-585.4
109059	1233.00	-620.40	P on log	LP-ADR	1233	-620.4
109085	1150.00	-511.10	P on log	LP-ADR	1150	-511.1
109279	1618.00	-1084.80	P on log	LP-ADR	1618	-1084.8
109338	1161.00	-581.40	P on log	LP-ADR	1161	-581.4
109440	1223.00	-597.00	P on log	LP-ADR	1223	-597
109472	1218.00	-603.60	P on log	LP-ADR	1218	-603.6
109556	1433.00	-865.50	P on log	LP-ADR	1433	-865.5
109750	1223.00	-647.70	P on log	LP-ADR	1223	-647.7
109818	3438.00	-2968.70	P on log	LP-ADR	3438	-2968.7
110720	1298.00	-434.20	P on log	LP-ADR	1298	-434.2
110810	1180.00	-576.90	P on log	LP-ADR	1180	-576.9
110873	1208.00	-510.30	P on log	LP-ADR	1208	-510.3
111111	1804.00	-1164.30	P on log	LP-ADR	1804	-1164.3
111317	1212.00	-597.20	P on log	LP-ADR	1212	-597.2
111535	1425.00	-812.40	P on log	LP-ADR	1425	-812.4
111582	1176.00	-551.50	P on log	LP-ADR	1176	-551.5
111583	1196.00	-607.30	P on log	LP-ADR	1196	-607.3
111698	1245.00	-535.60	P	DP-FMRP	1245	-535.6
111711	1390.00	-715.30	P on log	LP-ADR	1390	-715.3
111826	1158.00	-457.90	P on log	LP-ADR	1158	-457.9
111833	1187.00	-653.60	P on log	LP-ADR	1187	-653.6

111866	1697.00	-1273.30	P on log	LP-ADR	1697	-1273.3
112219	1334.00	-808.90	P on log	LP-ADR	1334	-808.9
112229	-9999.25	-9999.25	N/A	IC-N/A	2025.426	-1403.926
112277	1211.00	-567.10	P on log	LP-ADR	1211	-567.1
112288	1706.00	-1072.30	P on log	LP-ADR	1706	-1072.3
112435	1108.00	-447.80	P on log	LP-ADR	1108	-447.8
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
112764	1129.00	-409.20	P on log	LP-ADR	1129	-409.2
113002	1222.00	-470.70	P on log	LP-ADR	1222	-470.7
113076	1760.00	-1064.30	P on log	LP-ADR	1760	-1064.3
113543	1267.00	-379.80	P on log	LP-ADR	1267	-379.8
113949	1431.00	-620.40	P on log	LP-ADR	1431	-620.4
114144	1401.00	-719.30	P on log	LP-ADR	1401	-719.3
114292	1948.00	-1275.70	P on log	LP-ADR	1948	-1275.7
114341	1247.00	-544.20	P on log	LP-ADR	1247	-544.2
114661	2580.00	-2149.50	P on log	LP-ADR	2580	-2149.5
115223	1346.00	-583.10	P on log	LP-ADR	1346	-583.1
115312	1675.00	-879.00	P on log	LP-ADR	1675	-879
115429	1670.00	-1129.00	P on log	LP-ADR	1670	-1129
120335	252.00	414.90	P on log	LP-ADR	252	414.9
120748	1153.00	-535.60	P on log	LP-ADR	1153	-535.6
121349	1032.00	-366.60	P on log	LP-ADR	1032	-366.6
121595	1410.00	-740.30	P on log	LP-ADR	1410	-740.3
122123	1120.00	-452.40	P on log	LP-ADR	1120	-452.4
123053	772.00	-242.00	P on log	LP-ADR	772	-242
123336	941.00	-254.00	P on log	LP-ADR	941	-254
123654	1929.00	-1227.20	P on log	LP-ADR	1929	-1227.2
123757	1759.00	-1241.20	P on log	LP-ADR	1759	-1241.2
124339	2031.00	-1288.00	P on log	LP-ADR	2031	-1288
124491	1954.00	-1245.30	P on log	LP-ADR	1954	-1245.3
124493	1902.00	-1284.80	P on log	LP-ADR	1902	-1284.8
124522	1899.00	-1172.50	P on log	LP-ADR	1899	-1172.5
124524	1762.00	-1269.70	P on log	LP-ADR	1762	-1269.7
124638	1939.00	-1229.80	P on log	LP-ADR	1939	-1229.8
125043	1159.00	-460.40	P on log	LP-ADR	1159	-460.4
125506	1068.00	-215.50	P on log	LP-ADR	1068	-215.5
125635	652.00	-19.50	P	DP-FMRP	652	-19.5
125769	1093.00	-328.70	P on log	LP-ADR	1093	-328.7
126005	1120.00	-462.20	P on log	LP-ADR	1120	-462.2
126648	830.00	-243.30	P on log	LP-ADR	830	-243.3
126649	1128.00	-423.10	P on log	LP-ADR	1128	-423.1
126650	1161.00	-498.40	P on log	LP-ADR	1161	-498.4

126810	983.00	-167.70	P on log	LP-ADR	983	-167.7
127044	1098.00	-326.80	P on log	LP-ADR	1098	-326.8
127048	1034.00	-243.50	P on log	LP-ADR	1034	-243.5
127228	-9999.25	-9999.25	N/A	IC-N/A	2097.794	-1475.194
127229	2277.00	-1829.70	P on log	LP-ADR	2277	-1829.7
127242	853.00	-206.10	P on log	LP-ADR	853	-206.1
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_M D	T2_ana_SS
127243	1100.00	-338.90	P on log	LP-ADR	1100	-338.9
127304	2616.00	-1995.00	P on log	LP-ADR	2616	-1995
128673	2790.00	-2404.70	P on log	LP-ADR	2790	-2404.7
128777	1628.00	-1081.90	P on log	LP-ADR	1628	-1081.9
129065	1984.00	-1337.80	P	DP-FMRP	1984	-1337.8
129425	2564.00	-2132.30	P on log	LP-ADR	2564	-2132.3
129907	2149.00	-1529.10	P on log	LP-ADR	2149	-1529.1
129908	2160.00	-1589.90	P on log	LP-ADR	2160	-1589.9
129973	2228.00	-1628.90	P on log	LP-ADR	2228	-1628.9
130060	1954.00	-1513.50	P on log	LP-ADR	1954	-1513.5
130135	1612.00	-893.90	P on log	LP-ADR	1612	-893.9
131875	674.00	-79.80	P on log	LP-ADR	674	-79.8
132142	2734.00	-2182.00	P on log	LP-ADR	2734	-2182
132143	2689.00	-2186.40	P on log	LP-ADR	2689	-2186.4
132325	719.00	-101.90	P on log	LP-ADR	719	-101.9
132326	679.00	-65.10	P on log	LP-ADR	679	-65.1
132327	672.00	-103.20	P on log	LP-ADR	672	-103.2
132433	2630.00	-2210.40	P on log	LP-ADR	2630	-2210.4
133831	380.00	70.10	P on log	LP-ADR	380	70.1
134591	1000.00	-404.80	P on log	LP-ADR	1000	-404.8
134670	1711.00	-1248.30	P on log	LP-ADR	1711	-1248.3
135644	1102.00	-344.70	P on log	LP-ADR	1102	-344.7
135647	1205.00	-500.70	P on log	LP-ADR	1205	-500.7
136312	1117.00	-585.30	P on log	LP-ADR	1117	-585.3
136624	747.00	-167.60	P on log	LP-ADR	747	-167.6
136630	3435.00	-2975.00	P on log	LP-ADR	3435	-2975
136631	3465.00	-3030.90	P on log	LP-ADR	3465	-3030.9
137175	1528.00	-1035.90	P on log	LP-ADR	1528	-1035.9
137356	1120.00	-516.40	P on log	LP-ADR	1120	-516.4
137575	802.00	-189.10	P on log	LP-ADR	802	-189.1
137576	788.00	-152.50	P on log	LP-ADR	788	-152.5
138273	1324.00	-739.10	P on log	LP-ADR	1324	-739.1
138396	1299.00	-722.50	P on log	LP-ADR	1299	-722.5
138644	2144.00	-1591.90	P on log	LP-ADR	2144	-1591.9
139171	2161.00	-1665.70	P on log	LP-ADR	2161	-1665.7

141283	1276.00	-813.70	P on log	LP-ADR	1276	-813.7
141285	1187.00	-604.20	P on log	LP-ADR	1187	-604.2
143084	2833.00	-2346.10	P on log	LP-ADR	2833	-2346.1
2000111	215.00	549.90	P	DP-FMRP	215	549.9
2029993	2372.00	-1761.30	P on log	LP-ADR	2372	-1761.3
2030235	251.00	502.90	P on log	LP-ADR	251	502.9
KGS REC	T2_NAS_b	T2_SS	T2_pres	T2_src	T2_ana_MD	T2_ana_SS
2037542	765.00	-122.40	P	DP-FMRP	765	-122.4
2037613	540.00	190.20	P	DP-FMRP	540	190.2
2037770	908.00	-224.90	P	DP-FMRP	908	-224.9
2039921	315.00	193.50	P on log	LP-ADR	315	193.5
2040109	1054.00	-415.80	P	DP-FMRP	1054	-415.8
2040429	455.00	247.80	P on log	LP-ADR	455	247.8
2040433	1378.00	-775.40	P on log	LP-ADR	1378	-775.4
2040888	1731.00	-1311.00	P on log	LP-ADR	1731	-1311
2042187	512.00	117.20	P on log	LP-ADR	512	117.2

KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
1360	-9999.25	-9999.25	N/P	LP-ADR	263	305.6
1561	-9999.25	-9999.25	N/P	LP-ADR	182	427.7
1612	-9999.25	-9999.25	N/P	LP-ADR	368	200.7
1647	-9999.25	-9999.25	N/P	LP-ADR	389	243
1677	-9999.25	-9999.25	N/P	LP-ADR	333	347.5
2089	-9999.25	-9999.25	N/P	LP-ADR	327	368.9
2182	-9999.25	-9999.25	N/P	LP-ADR	565	138.8
2183	-9999.25	-9999.25	N/P	LP-ADR	632	35.6
2619	1460.00	-964.80	P on log	LP-ADR	1460	-964.8
2626	1706.00	-1257.90	P on log	LP-ADR	1706	-1257.9
2627	2900.00	-2491.00	P on log	LP-ADR	2900	-2491
2628	2846.00	-2424.30	P on log	LP-ADR	2846	-2424.3
2631	1982.00	-1296.90	P on log	LP-ADR	1982	-1296.9
8245	-9999.25	-9999.25	N/A	IC-N/A	556	80.5
8247	-9999.25	-9999.25	N/A	IC-N/A	608	43.9
8249	1149.00	-569.60	P on log	LP-ADR	1149	-569.6
8254	1379.70	-761.70	P on log	LP-ADR	1379.7	-761.7
8255	-9999.25	-9999.25	N/A	IC-N/A	1272.599	-764.599
8268	1574.00	-811.30	P	DP-FMRP	1574	-811.3
8288	1632.00	-1120.00	P on log	LP-ADR	1632	-1120
8840	1601.00	-1017.10	P	DP-FMRP	1601	-1017.1
8852	1665.00	-1081.30	P	DP-FMRP	1665	-1081.3

8853	-9999.25	-9999.25	N/A	IC-N/A	1693.72	-1131.32
8856	1900.00	-1162.10	P on log	LP-ADR	1900	-1162.1
8870	1899.00	-1157.50	P	DP-FMRP	1899	-1157.5
8884	-9999.25	-9999.25	N/A	IC-N/A	1933.971	-1192.171
8922	-9999.25	-9999.25	N/A	IC-N/A	1485.914	-946.214
8929	1667.00	-963.60	P on log	LP-ADR	1667	-963.6
8931	1663.00	-956.90	P on log	LP-ADR	1663	-956.9
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
8942	1671.00	-999.10	P on log	LP-ADR	1671	-999.1
8949	1736.00	-1042.20	P on log	LP-ADR	1736	-1042.2
8950	-9999.25	-9999.25	N/A	IC-N/A	1733.085	-1033.785
8966	1628.80	-900.90	P	DP-FMRP	1628.8	-900.9
8970	1485.00	-878.90	P on log	LP-ADR	1485	-878.9
8974	1692.00	-1001.60	P on log	LP-ADR	1692	-1001.6
8979	1478.00	-904.40	P	DP-FMRP	1478	-904.4
8985	1120.00	-466.10	P on log	LP-ADR	1120	-466.1
9892	-9999.25	-9999.25	N/P	LP-ADR	1010	-392.1
9948	-9999.25	-9999.25	N/P	LP-ADR	860	-347.5
10018	996.00	-444.00	P on log	LP-ADR	996	-444
10037	-9999.25	-9999.25	N/P	LP-ADR	858	-205.3
12499	783.00	-251.50	P on log	LP-ADR	783	-251.5
12520	1148.00	-525.30	P	DP-FMRP	1148	-525.3
12534	1097.00	-392.50	P	DP-FMRP	1097	-392.5
12535	-9999.25	-9999.25	N/A	DP-N/A	1030	-364.3
12557	-9999.25	-9999.25	N/A	DP-N/A	1024	-364.1
12581	1203.00	-567.10	P	DP-FMRP	1203	-567.1
12585	1165.00	-585.00	P	DP-FMRP	1165	-585
12588	1327.00	-612.20	P on log	LP-ADR	1327	-612.2
12589	1313.00	-587.20	P on log	LP-ADR	1313	-587.2
12611	1992.00	-1239.70	P	DP-FMRP	1992	-1239.7
12623	-9999.25	-9999.25	N/A	IC-N/A	1708.594	-1221.894
12632	1710.00	-1219.70	P on log	LP-ADR	1710	-1219.7
12659	1434.00	-744.20	P on log	LP-ADR	1434	-744.2
16942	-9999.25	-9999.25	N/A	DP-FMRP	970	-281.5
16946	543.00	116.30	P	DP-FMRP	543	116.3
16951	-9999.25	-9999.25	N/P	LP-ADR	527	97.2
17423	-9999.25	-9999.25	N/P	LP-ADR	262	218.5
17428	1047.00	-514.30	P	DP-FMRP	1047	-514.3
17448	898.00	-321.70	P on log	LP-ADR	898	-321.7
17470	588.00	-109.60	P on log	LP-ADR	588	-109.6
17473	583.00	-39.00	P on log	LP-ADR	583	-39
17494	1336.00	-698.70	P on log	LP-ADR	1336	-698.7
17496	1375.00	-741.60	P on log	LP-ADR	1375	-741.6

17550	825.80	-367.30	P on log	LP-ADR	825.8	-367.3
17582	-9999.25	-9999.25	N/A	IC-N/A	606	43.1
17588	1771.00	-1361.30	P on log	LP-ADR	1771	-1361.3
17592	1437.80	-844.90	P on log	LP-ADR	1437.8	-844.9
17660	1200.00	-582.90	P on log	LP-ADR	1200	-582.9
17687	1146.00	-538.60	P on log	LP-ADR	1146	-538.6
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
18752	3416.00	-2921.60	P	DP-FMRP	3416	-2921.6
21277	-9999.25	-9999.25	N/P	LP-ADR	310	486.4
21322	-9999.25	-9999.25	N/P	LP-ADR	392	377.8
22861	-9999.25	-9999.25	N/P	LP-ADR	1102	-539.3
23475	1238.00	-619.10	P on log	LP-ADR	1238	-619.1
23477	1078.00	-390.90	P on log	LP-ADR	1078	-390.9
24414	-9999.25	-9999.25	N/A	LP-N/A	460	112
24513	818.70	-195.10	P on log	LP-ADR	818.7	-195.1
24518	-9999.25	-9999.25	N/P	LP-ADR	532	33.8
24520	-9999.25	-9999.25	N/A	IC-N/A	412	194.3
24533	1278.00	-646.40	P	DP-FMRP	1278	-646.4
24862	1134.00	-456.00	P on log	LP-ADR	1134	-456
24878	335.00	250.30	P on log	LP-ADR	335	250.3
24985	1176.00	-533.40	P on log	LP-ADR	1176	-533.4
24987	1180.00	-532.90	P on log	LP-ADR	1180	-532.9
25006	1240.00	-581.60	P on log	LP-ADR	1240	-581.6
25007	-9999.25	-9999.25	N/A	LP-N/A	426	238
25065	-9999.25	-9999.25	N/A	LP-N/A	308	322.2
25165	2232.00	-1623.30	P on log	LP-ADR	2232	-1623.3
26194	-9999.25	-9999.25	N/P	LP-ADR	600	89.3
26231	-9999.25	-9999.25	N/A	LP-N/A	1690	-1205.5
26540	-9999.25	-9999.25	N/A	IC-N/A	1853.561	-1412.161
26541	-9999.25	-9999.25	N/A	LP-N/A	1785	-1373.8
26542	-9999.25	-9999.25	N/A	LP-N/A	1872	-1264.9
26543	-9999.25	-9999.25	N/A	IC-N/A	2006.83	-1349.53
26544	-9999.25	-9999.25	N/A	IC-N/A	2060.193	-1396.793
26549	-9999.25	-9999.25	N/A	LP-N/A	657	-15
26609	905.00	-342.90	P on log	LP-ADR	905	-342.9
26970	1182.00	-660.40	P	DP-FMRP	1182	-660.4
27009	-9999.25	-9999.25	N/A	IC-N/A	1749.38	-1210.58
27145	1088.00	-470.30	P on log	LP-ADR	1088	-470.3
27146	-9999.25	-9999.25	N/A	DP-N/A	1254	-653.5
27367	1277.00	-693.60	P on log	LP-ADR	1277	-693.6
27852	-9999.25	-9999.25	N/A	DP-N/A	784	-173.5
28285	1283.00	-620.00	P on log	LP-ADR	1283	-620

28442	-9999.25	-9999.25	N/A	IC-N/A	1667.137	-983.137
28447	-9999.25	-9999.25	N/A	LP-N/A	1684	-984.9
28458	-9999.25	-9999.25	N/A	LP-N/A	1474	-940.7
28470	1634.00	-900.00	P on log	LP-ADR	1634	-900
29044	1067.70	-569.40	P on log	LP-ADR	1067.7	-569.4
29071	1257.00	-579.20	P on log	LP-ADR	1257	-579.2
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
29102	1256.00	-665.20	P on log	LP-ADR	1256	-665.2
30067	-9999.25	-9999.25	N/P	LP-ADR	652	11.9
30090	-9999.25	-9999.25	N/A	LP-N/A	1696	-1217.6
30092	-9999.25	-9999.25	N/A	LP-N/A	1042	-444.5
30117	729.00	-244.50	P on log	LP-ADR	729	-244.5
30118	989.00	-388.40	P on log	LP-ADR	989	-388.4
30483	-9999.25	-9999.25	N/A	LP-N/A	489	145.5
30670	1327.00	-780.60	P on log	LP-ADR	1327	-780.6
30794	-9999.25	-9999.25	N/A	IC-N/A	1949.625	-1185.525
30795	-9999.25	-9999.25	N/A	LP-N/A	1730	-1195.2
30824	-9999.25	-9999.25	N/P	LP-ADR	221	600.1
31005	-9999.25	-9999.25	N/P	LP-ADR	280	430.1
31018	-9999.25	-9999.25	N/A	IC-N/A	1707	-1204.8
31120	-9999.25	-9999.25	N/A	IC-N/A	284	472.9
31264	1318.00	-837.70	P on log	LP-ADR	1318	-837.7
31394	-9999.25	-9999.25	N/P	LP-ADR	873	-256.1
32126	881.00	-378.40	P on log	LP-ADR	881	-378.4
32468	969.00	-368.50	P on log	LP-ADR	969	-368.5
32641	-9999.25	-9999.25	N/P	LP-ADR	338	296.2
32959	-9999.25	-9999.25	N/P	LP-ADR	244	405.5
33057	642.10	-17.80	P on log	LP-ADR	642.1	-17.8
33896	1314.00	-645.80	P on log	LP-ADR	1314	-645.8
34176	1184.00	-571.90	P on log	LP-ADR	1184	-571.9
34251	1180.00	-662.50	P on log	LP-ADR	1180	-662.5
34413	-9999.25	-9999.25	N/A	IC-N/A	296	235.2
34743	1216.00	-662.60	P on log	LP-ADR	1216	-662.6
35139	854.00	-405.20	P on log	LP-ADR	854	-405.2
35370	1165.00	-407.60	P on log	LP-ADR	1165	-407.6
36020	1149.00	-516.60	P on log	LP-ADR	1149	-516.6
36251	-9999.25	-9999.25	N/A	IC-N/A	1669.664	-1146.664
36373	-9999.25	-9999.25	N/A	IC-N/A	1703.713	-1187.913
36411	1407.00	-790.10	P on log	LP-ADR	1407	-790.1
36701	1087.00	-536.90	P on log	LP-ADR	1087	-536.9
37056	598.00	10.60	P on log	LP-ADR	598	10.6
37057	543.00	44.10	P on log	LP-ADR	543	44.1

37064	-9999.25	-9999.25	N/P	LP-ADR	454	107.8
37649	870.00	-432.00	P on log	LP-ADR	870	-432
37651	1029.00	-492.40	P on log	LP-ADR	1029	-492.4
37710	891.00	-416.40	P on log	LP-ADR	891	-416.4
37719	982.00	-416.20	P on log	LP-ADR	982	-416.2
37826	1141.00	-721.00	P on log	LP-ADR	1141	-721
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
38267	884.00	-303.80	P on log	LP-ADR	884	-303.8
38274	883.00	-329.20	P on log	LP-ADR	883	-329.2
38322	-9999.25	-9999.25	N/A	IC-N/A	1873.735	-1144.635
38426	-9999.25	-9999.25	N/P	LP-ADR	181	508.1
38932	1310.00	-762.60	P on log	LP-ADR	1310	-762.6
41548	-9999.25	-9999.25	N/A	IC-N/A	1720.38	-1172.48
41592	-9999.25	-9999.25	N/A	IC-N/A	1695.021	-1189.521
41615	1132.00	-486.80	P on log	LP-ADR	1132	-486.8
41696	-9999.25	-9999.25	N/A	IC-N/A	508	76.7
41697	-9999.25	-9999.25	N/A	IC-N/A	475	96.3
41725	685.00	-45.90	P on log	LP-ADR	685	-45.9
41810	672.00	-81.60	P on log	LP-ADR	672	-81.6
41947	-9999.25	-9999.25	N/A	IC-N/A	431	157.8
42211	1180.00	-555.70	P on log	LP-ADR	1180	-555.7
42252	-9999.25	-9999.25	N/A	IC-N/A	442	149.3
42524	-9999.25	-9999.25	N/A	IC-N/A	456	105.2
43185	-9999.25	-9999.25	N/P	LP-ADR	322	379.4
43186	-9999.25	-9999.25	N/A	IC-N/A	263	367.8
43551	-9999.25	-9999.25	N/A	IC-N/A	1967	-1242.2
43567	-9999.25	-9999.25	N/A	IC-N/A	1859.118	-1208.318
43875	1026.00	-421.40	P on log	LP-ADR	1026	-421.4
43976	-9999.25	-9999.25	N/A	IC-N/A	472	143.7
43985	-9999.25	-9999.25	N/A	IC-N/A	962	-312.1
44002	-9999.25	-9999.25	N/P	LP-ADR	787	-169.1
44194	1440.00	-927.40	P on log	LP-ADR	1440	-927.4
44391	1106.00	-373.80	P on log	LP-ADR	1106	-373.8
44511	2907.00	-2473.60	P on log	LP-ADR	2907	-2473.6
44554	-9999.25	-9999.25	N/A	IC-N/A	339	418.1
44735	1248.00	-663.90	P on log	LP-ADR	1248	-663.9
44743	-9999.25	-9999.25	N/P	LP-ADR	446	283.7
44795	889.00	-456.20	P on log	LP-ADR	889	-456.2
44796	782.00	-294.50	P on log	LP-ADR	782	-294.5
44820	1190.00	-520.70	P on log	LP-ADR	1190	-520.7
44831	-9999.25	-9999.25	N/A	IC-N/A	570	101
44884	905.00	-475.20	P on log	LP-ADR	905	-475.2

44890	1250.00	-559.40	P on log	LP-ADR	1250	-559.4
44938	-9999.25	-9999.25	N/A	IC-N/A	524	73.6
44942	-9999.25	-9999.25	N/A	IC-N/A	544	58.8
44957	-9999.25	-9999.25	N/A	IC-N/A	627	-86.9
44962	1586.00	-866.70	P on log	LP-ADR	1586	-866.7
44964	1336.00	-762.60	P on log	LP-ADR	1336	-762.6
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
44966	-9999.25	-9999.25	N/A	LP-N/A	548	37.5
45406	1102.00	-429.00	P on log	LP-ADR	1102	-429
45408	1054.00	-483.00	P on log	LP-ADR	1054	-483
45607	1603.00	-899.10	P on log	LP-ADR	1603	-899.1
45907	1054.00	-474.80	P on log	LP-ADR	1054	-474.8
46168	-9999.25	-9999.25	N/A	IC-N/A	1948	-1240.7
46193	-9999.25	-9999.25	N/A	IC-N/A	1731	-1218.9
46768	-9999.25	-9999.25	N/A	IC-N/A	1962	-1258
46770	1156.00	-521.50	P on log	LP-ADR	1156	-521.5
46810	888.00	-291.50	P on log	LP-ADR	888	-291.5
47882	-9999.25	-9999.25	N/P	DP-FMRP	243	557.1
47936	1965.00	-1241.60	P	DP-FMRP	1965	-1241.6
48080	3405.00	-2933.50	P	DP-FMRP	3405	-2933.5
48511	1177.00	-386.60	P on log	LP-ADR	1177	-386.6
48678	-9999.25	-9999.25	N/A	IC-N/A	492	119
48712	-9999.25	-9999.25	N/A	IC-N/A	963	-415
48915	1170.00	-726.40	P on log	LP-ADR	1170	-726.4
49185	891.00	-382.10	P on log	LP-ADR	891	-382.1
49529	835.00	-245.40	P	DP-FMRP	835	-245.4
50331	1192.00	-542.50	P on log	LP-ADR	1192	-542.5
50333	1175.00	-547.50	P on log	LP-ADR	1175	-547.5
50439	-9999.25	-9999.25	N/P	LP-ADR	917	-128.7
50832	-9999.25	-9999.25	N/P	LP-ADR	595	178.1
50878	-9999.25	-9999.25	N/P	LP-ADR	162	568.9
51143	-9999.25	-9999.25	N/P	LP-ADR	222	442.6
51478	-9999.25	-9999.25	N/A	IC-N/A	1762	-1247.2
51636	1094.00	-447.30	P on log	LP-ADR	1094	-447.3
53626	796.00	-184.20	P on log	LP-ADR	796	-184.2
53903	1092.00	-413.50	P on log	LP-ADR	1092	-413.5
54301	2551.00	-2142.90	P on log	LP-ADR	2551	-2142.9
54921	-9999.25	-9999.25	N/A	IC-N/A	1314	-625
55626	899.00	-406.10	P on log	LP-ADR	899	-406.1
57212	1600.00	-923.90	P on log	LP-ADR	1600	-923.9
57253	1216.00	-476.30	P on log	LP-ADR	1216	-476.3
57369	1566.00	-821.80	P on log	LP-ADR	1566	-821.8

57470	1270.00	-602.70	P on log	LP-ADR	1270	-602.7
57726	1132.00	-440.40	P on log	LP-ADR	1132	-440.4
57764	-9999.25	-9999.25	N/P	LP-ADR	478	179.6
58703	-9999.25	-9999.25	N/P	LP-ADR	209	572.7
59328	1500.00	-869.30	P on log	LP-ADR	1500	-869.3
60392	-9999.25	-9999.25	N/A	LP-N/A	1574	-891.7
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
60463	-9999.25	-9999.25	N/A	IC-N/A	352	310.8
60620	-9999.25	-9999.25	N/A	IC-N/A	2097	-1559.9
60647	1210.00	-438.10	P on log	LP-ADR	1210	-438.1
60784	-9999.25	-9999.25	N/A	IC-N/A	2520	-2102.9
61104	-9999.25	-9999.25	N/A	IC-N/A	610	-29.5
61708	-9999.25	-9999.25	N/P	LP-ADR	154	565.3
61894	2306.00	-1749.70	P on log	LP-ADR	2306	-1749.7
61911	-9999.25	-9999.25	N/P	LP-ADR	232	447.8
64431	-9999.25	-9999.25	N/P	LP-ADR	477	220.9
64550	-9999.25	-9999.25	N/A	IC-N/A	1572.963	-1143.663
64561	860.00	-206.00	P on log	LP-ADR	860	-206
64699	1300.00	-707.20	P on log	LP-ADR	1300	-707.2
65374	1680.00	-1125.50	P on log	LP-ADR	1680	-1125.5
66140	-9999.25	-9999.25	N/P	LP-ADR	816	-158.3
66243	-9999.25	-9999.25	N/A	IC-N/A	433	167.2
66398	933.00	-474.70	P on log	LP-ADR	933	-474.7
66515	1377.00	-754.50	P on log	LP-ADR	1377	-754.5
67124	-9999.25	-9999.25	N/A	IC-N/A	316	323.8
67275	974.00	-518.30	P on log	LP-ADR	974	-518.3
68018	1210.00	-642.00	P on log	LP-ADR	1210	-642
69043	1101.00	-581.20	P on log	LP-ADR	1101	-581.2
69391	972.00	-355.00	P on log	LP-ADR	972	-355
70030	1000.00	-476.70	P on log	LP-ADR	1000	-476.7
70521	861.00	-260.50	P on log	LP-ADR	861	-260.5
70700	1074.00	-632.30	P on log	LP-ADR	1074	-632.3
71650	1276.00	-747.40	P on log	LP-ADR	1276	-747.4
72123	1292.00	-748.50	P on log	LP-ADR	1292	-748.5
74160	853.00	-264.20	P on log	LP-ADR	853	-264.2
75341	-9999.25	-9999.25	N/P	LP-ADR	250	281.2
75437	1245.00	-695.70	P on log	LP-ADR	1245	-695.7
76317	-9999.25	-9999.25	N/A	IC-N/A	725.9416	-194.8416
76798	-9999.25	-9999.25	N/A	IC-N/A	720	-181.3
77043	998.00	-404.30	P on log	LP-ADR	998	-404.3
77871	-9999.25	-9999.25	N/A	IC-N/A	650.5627	-150.4627
77995	1064.00	-598.30	P on log	LP-ADR	1064	-598.3

78566	573.00	-12.50	P on log	LP-ADR	573	-12.5
78573	1365.00	-786.90	P on log	LP-ADR	1365	-786.9
79583	1037.00	-537.80	P on log	LP-ADR	1037	-537.8
80622	1186.00	-454.90	P on log	LP-ADR	1186	-454.9
80871	719.90	-146.40	P on log	LP-ADR	719.9	-146.4
81073	-9999.25	-9999.25	N/A	LP-N/A	718	-145
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
81187	-9999.25	-9999.25	N/A	IC-N/A	569.9007	-29.2007
81188	-9999.25	-9999.25	N/A	IC-N/A	585.6044	-34.6044
81454	919.00	-311.00	P on log	LP-ADR	919	-311
81821	-9999.25	-9999.25	N/A	IC-N/A	712	-150.1
82547	-9999.25	-9999.25	N/P	LP-ADR	240	413.9
82646	-9999.25	-9999.25	N/A	IC-N/A	364	346.7
82869	1326.00	-679.80	P on log	LP-ADR	1326	-679.8
82961	-9999.25	-9999.25	N/A	IC-N/A	172	529.8
83200	1206.00	-595.60	P on log	LP-ADR	1206	-595.6
83643	1176.00	-574.70	P on log	LP-ADR	1176	-574.7
84897	1338.00	-751.50	P on log	LP-ADR	1338	-751.5
85857	1097.00	-359.90	P on log	LP-ADR	1097	-359.9
85898	1408.00	-709.50	P on log	LP-ADR	1408	-709.5
86110	-9999.25	-9999.25	N/P	DP-ADR	255	600.3
86659	-9999.25	-9999.25	N/A	IC-N/A	825	-287
87133	794.00	-244.90	P on log	LP-ADR	794	-244.9
87342	718.00	-16.70	P on log	LP-ADR	718	-16.7
87691	1260.00	-630.70	P on log	LP-ADR	1260	-630.7
88126	2116.00	-1603.60	P on log	LP-ADR	2116	-1603.6
88310	390.00	217.10	P on log	LP-ADR	390	217.1
88519	-9999.25	-9999.25	N/P	LP-ADR	499	221.4
88720	1469.00	-951.30	P on log	LP-ADR	1469	-951.3
88824	1676.00	-1183.50	P on log	LP-ADR	1676	-1183.5
89627	-9999.25	-9999.25	N/A	IC-N/A	1080	-555.8
89864	1875.00	-1455.90	P	DP-FMRP	1875	-1455.9
89887	2668.00	-2267.60	P	DP-FMRP	2668	-2267.6
89889	2645.00	-2245.40	P	DP-FMRP	2645	-2245.4
90181	1174.00	-599.20	P on log	LP-ADR	1174	-599.2
91075	-9999.25	-9999.25	N/A	IC-N/A	2148	-1712.2
92068	-9999.25	-9999.25	N/P	LP-ADR	500	220.4
92622	-9999.25	-9999.25	N/A	IC-N/A	440	115.5
93190	-9999.25	-9999.25	N/A	IC-N/A	382	298.6
93217	-9999.25	-9999.25	N/P	LP-ADR	948	-201.5
100378	1248.00	-616.90	P on log	LP-ADR	1248	-616.9
101078	-9999.25	-9999.25	N/A	IC-N/A	481	86.6

101580	-9999.25	-9999.25	N/A	IC-N/A	863	-348.1
101593	1672.00	-1224.00	P on log	LP-ADR	1672	-1224
101596	1170.00	-577.90	P on log	LP-ADR	1170	-577.9
101599	-9999.25	-9999.25	N/A	IC-N/A	1960.813	-1222.313
101654	-9999.25	-9999.25	N/A	IC-N/A	354	204.9
101660	-9999.25	-9999.25	N/A	IC-N/A	914	-255.2
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
101732	691.00	-119.20	P on log	LP-ADR	691	-119.2
101733	1026.00	-503.30	P on log	LP-ADR	1026	-503.3
102191	-9999.25	-9999.25	N/A	IC-N/A	566	-23.6
102215	-9999.25	-9999.25	N/A	IC-N/A	485	78
102491	1453.00	-880.40	P on log	LP-ADR	1453	-880.4
102827	2495.00	-2038.90	P on log	LP-ADR	2495	-2038.9
103416	-9999.25	-9999.25	N/P	LP-ADR	619	0.6
103481	-9999.25	-9999.25	N/A	IC-N/A	1314	-444.3
103599	1452.00	-1013.00	P on log	LP-ADR	1452	-1013
104457	-9999.25	-9999.25	N/P	LP-ADR	760	-195.9
104458	-9999.25	-9999.25	N/P	LP-ADR	662	-69.5
104459	-9999.25	-9999.25	N/A	IC-N/A	1060	-265.5
104629	2490.00	-2033.90	P on log	LP-ADR	2490	-2033.9
105693	864.00	-265.70	P on log	LP-ADR	864	-265.7
105694	-9999.25	-9999.25	N/P	LP-ADR	484	167.8
106588	-9999.25	-9999.25	N/P	LP-ADR	202	525.2
107711	973.00	-368.20	P on log	LP-ADR	973	-368.2
107951	1611.00	-1024.50	P on log	LP-ADR	1611	-1024.5
108682	1262.00	-609.30	P on log	LP-ADR	1262	-609.3
108819	1272.00	-585.40	P on log	LP-ADR	1272	-585.4
109059	1233.00	-620.40	P on log	LP-ADR	1233	-620.4
109085	1150.00	-511.10	P on log	LP-ADR	1150	-511.1
109279	1618.00	-1084.80	P on log	LP-ADR	1618	-1084.8
109338	1161.00	-581.40	P on log	LP-ADR	1161	-581.4
109440	1223.00	-597.00	P on log	LP-ADR	1223	-597
109472	1218.00	-603.60	P on log	LP-ADR	1218	-603.6
109556	1433.00	-865.50	P on log	LP-ADR	1433	-865.5
109750	1223.00	-647.70	P on log	LP-ADR	1223	-647.7
109818	3438.00	-2968.70	P on log	LP-ADR	3438	-2968.7
110720	-9999.25	-9999.25	N/P	LP-ADR	1298	-434.2
110810	1180.00	-576.90	P on log	LP-ADR	1180	-576.9
110873	1208.00	-510.30	P on log	LP-ADR	1208	-510.3
111111	1804.00	-1164.30	P on log	LP-ADR	1804	-1164.3
111317	1212.00	-597.20	P on log	LP-ADR	1212	-597.2
111535	1425.00	-812.40	P on log	LP-ADR	1425	-812.4

111582	1176.00	-551.50	P on log	LP-ADR	1176	-551.5
111583	1196.00	-607.30	P on log	LP-ADR	1196	-607.3
111698	-9999.25	-9999.25	N/A	IC-N/A	1245	-535.6
111711	1390.00	-715.30	P on log	LP-ADR	1390	-715.3
111826	1158.00	-457.90	P on log	LP-ADR	1158	-457.9
111833	1187.00	-653.60	P on log	LP-ADR	1187	-653.6
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
111866	1697.00	-1273.30	P on log	LP-ADR	1697	-1273.3
112219	1334.00	-808.90	P on log	LP-ADR	1334	-808.9
112229	-9999.25	-9999.25	N/A	IC-N/A	2025.426	-1403.926
112277	1211.00	-567.10	P on log	LP-ADR	1211	-567.1
112288	1706.00	-1072.30	P on log	LP-ADR	1706	-1072.3
112435	1108.00	-447.80	P on log	LP-ADR	1108	-447.8
112764	1129.00	-409.20	P on log	LP-ADR	1129	-409.2
113002	1222.10	-470.80	P on log	LP-ADR	1222.1	-470.8
113076	1760.00	-1064.30	P on log	LP-ADR	1760	-1064.3
113543	-9999.25	-9999.25	N/P	LP-ADR	1267	-379.8
113949	1431.00	-620.40	P on log	LP-ADR	1431	-620.4
114144	1401.00	-719.30	P on log	LP-ADR	1401	-719.3
114292	-9999.25	-9999.25	N/A	IC-N/A	1948	-1275.7
114341	-9999.25	-9999.25	N/A	IC-N/A	1247	-544.2
114661	2580.00	-2149.50	P on log	LP-ADR	2580	-2149.5
115223	1346.00	-583.10	P on log	LP-ADR	1346	-583.1
115312	1675.00	-879.00	P on log	LP-ADR	1675	-879
115429	1670.00	-1129.00	P on log	LP-ADR	1670	-1129
120335	-9999.25	-9999.25	N/P	LP-ADR	252	414.9
120748	1153.00	-535.60	P	DP-FMRP	1153	-535.6
121349	-9999.25	-9999.25	N/P	LP-ADR	1032	-366.6
121595	1410.00	-740.30	P on log	LP-ADR	1410	-740.3
122123	-9999.25	-9999.25	N/P	LP-ADR	1120	-452.4
123053	-9999.25	-9999.25	N/A	IC-N/A	772	-242
123336	-9999.25	-9999.25	N/A	IC-N/A	941	-254
123654	-9999.25	-9999.25	N/A	IC-N/A	1929	-1227.2
123757	-9999.25	-9999.25	N/A	IC-N/A	1759	-1241.2
124339	-9999.25	-9999.25	N/A	IC-N/A	2031	-1288
124491	-9999.25	-9999.25	N/A	IC-N/A	1954	-1245.3
124493	-9999.25	-9999.25	N/A	IC-N/A	1902	-1284.8
124522	-9999.25	-9999.25	N/A	IC-N/A	1899	-1172.5
124524	-9999.25	-9999.25	N/A	IC-N/A	1762	-1269.7
124638	-9999.25	-9999.25	N/A	IC-N/A	1939	-1229.8
125043	1159.00	-460.40	P on log	LP-ADR	1159	-460.4
125506	1068.00	-215.50	P on log	LP-ADR	1068	-215.5

125635	-9999.25	-9999.25	N/A	IC-N/A	652	-19.5
125769	1093.00	-328.70	P on log	LP-ADR	1093	-328.7
126005	1120.00	-462.20	P on log	LP-ADR	1120	-462.2
126648	-9999.25	-9999.25	N/A	IC-N/A	830	-243.3
126649	1128.00	-423.10	P on log	LP-ADR	1128	-423.1
126650	1161.00	-498.40	P on log	LP-ADR	1161	-498.4
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
126810	983.00	-167.70	P on log	LP-ADR	983	-167.7
127044	1098.00	-326.80	P on log	LP-ADR	1098	-326.8
127048	1034.00	-243.50	P on log	LP-ADR	1034	-243.5
127228	-9999.25	-9999.25	N/A	IC-N/A	2097.794	-1475.194
127229	-9999.25	-9999.25	N/A	IC-N/A	2277	-1829.7
127242	853.00	-206.10	P on log	LP-ADR	853	-206.1
127243	1100.00	-338.90	P on log	LP-ADR	1100	-338.9
127304	-9999.25	-9999.25	N/A	IC-N/A	2616	-1995
128673	2790.00	-2404.70	P on log	LP-ADR	2790	-2404.7
128777	-9999.25	-9999.25	N/A	IC-N/A	1628	-1081.9
129065	-9999.25	-9999.25	N/A	IC-N/A	1984	-1337.8
129425	2564.00	-2132.30	P on log	LP-ADR	2564	-2132.3
129907	-9999.25	-9999.25	N/A	IC-N/A	2149	-1529.1
129908	-9999.25	-9999.25	N/A	IC-N/A	2160	-1589.9
129973	-9999.25	-9999.25	N/A	IC-N/A	2228	-1628.9
130060	-9999.25	-9999.25	N/A	IC-N/A	1954	-1513.5
130135	-9999.25	-9999.25	N/A	IC-N/A	1612	-893.9
131875	674.00	-79.80	P on log	LP-ADR	674	-79.8
132142	2734.00	-2182.00	P on log	LP-ADR	2734	-2182
132143	2689.00	-2186.40	P on log	LP-ADR	2689	-2186.4
132325	719.00	-101.90	P on log	LP-ADR	719	-101.9
132326	679.00	-65.10	P on log	LP-ADR	679	-65.1
132327	673.00	-104.20	P on log	LP-ADR	673	-104.2
132433	2630.00	-2210.40	P on log	LP-ADR	2630	-2210.4
133831	-9999.25	-9999.25	N/A	IC-N/A	380	70.1
134591	1000.00	-404.80	P on log	LP-ADR	1000	-404.8
134670	1711.00	-1248.30	P on log	LP-ADR	1711	-1248.3
135644	1102.00	-344.70	P on log	LP-ADR	1102	-344.7
135647	1205.00	-500.70	P on log	LP-ADR	1205	-500.7
136312	1117.00	-585.30	P on log	LP-ADR	1117	-585.3
136624	-9999.25	-9999.25	N/A	IC-N/A	747	-167.6
136630	3435.00	-2975.00	P on log	LP-ADR	3435	-2975
136631	3465.00	-3030.90	P on log	LP-ADR	3465	-3030.9
137175	1528.00	-1035.90	P on log	LP-ADR	1528	-1035.9
137356	1120.00	-516.40	P on log	LP-ADR	1120	-516.4

137575	802.00	-189.10	P on log	LP-ADR	802	-189.1
137576	788.00	-152.50	P on log	LP-ADR	788	-152.5
138273	-9999.25	-9999.25	N/A	IC-N/A	1324	-739.1
138396	1299.00	-722.50	P on log	LP-ADR	1299	-722.5
138644	2144.00	-1591.90	P on log	LP-ADR	2144	-1591.9
139171	2161.00	-1665.70	P on log	LP-ADR	2161	-1665.7
KGS REC	T3_UDCN_t	T3_SS	T3_pres	T3_src	T3_ana_MD	T3_ana_SS
141283	1276.00	-813.70	P on log	LP-ADR	1276	-813.7
141285	1187.00	-604.20	P on log	LP-ADR	1187	-604.2
143084	2833.00	-2346.10	P on log	LP-ADR	2833	-2346.1
2000111	-9999.25	-9999.25	N/A	IC-N/A	215	549.9
2029993	2372.00	-1761.30	P on log	LP-ADR	2372	-1761.3
2030235	-9999.25	-9999.25	N/P	LP-ADR	251	502.9
2037542	-9999.25	-9999.25	N/A	IC-N/A	765	-122.4
2037613	-9999.25	-9999.25	N/A	IC-N/A	540	190.2
2037770	-9999.25	-9999.25	N/A	IC-N/A	908	-224.9
2039921	-9999.25	-9999.25	N/P	LP-ADR	315	193.5
2040109	1054.00	-415.80	P	DP-FMRF	1054	-415.8
2040429	-9999.25	-9999.25	N/P	LP-ADR	455	247.8
2040433	1378.00	-775.40	P on log	LP-ADR	1378	-775.4
2040888	1731.00	-1311.00	P on log	LP-ADR	1731	-1311
2042187	-9999.25	-9999.25	N/A	IC-N/A	512	117.2

KGS REC	T4_CLK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
1360	-9999.25	-9999.25	N/P	LP-ADR	263	305.6
1561	-9999.25	-9999.25	N/P	LP-ADR	182	427.7
1612	-9999.25	-9999.25	N/P	LP-ADR	368	200.7
1647	-9999.25	-9999.25	N/P	LP-ADR	389	243
1677	-9999.25	-9999.25	N/P	LP-ADR	333	347.5
2089	-9999.25	-9999.25	N/P	LP-ADR	327	368.9
2182	-9999.25	-9999.25	N/P	LP-ADR	565	138.8
2183	-9999.25	-9999.25	N/P	LP-ADR	632	35.6
2619	1520.00	-1024.80	P on log	LP-ADR	1520	-1024.8
2626	1806.00	-1357.90	P on log	LP-ADR	1806	-1357.9
2627	2962.00	-2553.00	P on log	LP-ADR	2962	-2553
2628	2902.00	-2480.30	P on log	LP-ADR	2902	-2480.3
2631	2124.00	-1438.90	P on log	LP-ADR	2124	-1438.9
8245	-9999.25	-9999.25	N/A	IC-N/A	573.7665	62.7335
8247	-9999.25	-9999.25	N/A	IC-N/A	628.707	23.193
8249	1199.00	-619.60	P on log	LP-ADR	1199	-619.6

8254	-9999.25	-9999.25	N/A	IC-N/A	1447.6443	-829.6443
8255	-9999.25	-9999.25	N/A	IC-N/A	1337.8991	-829.8991
8268	-9999.25	-9999.25	N/A	IC-N/A	1642.1101	-879.4101
8288	-9999.25	-9999.25	N/A	IC-N/A	1729.1951	-1217.1951
8840	-9999.25	-9999.25	N/A	IC-N/A	1695.226	-1111.326
8852	-9999.25	-9999.25	N/A	IC-N/A	1760.9949	-1177.2949
KGS REC	T4_CLK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
8853	-9999.25	-9999.25	N/A	IC-N/A	1791.673	-1229.273
8856	-9999.25	-9999.25	N/A	IC-N/A	2008.908	-1271.008
8870	-9999.25	-9999.25	N/A	IC-N/A	2014.076	-1272.576
8884	-9999.25	-9999.25	N/A	IC-N/A	2044.588	-1302.788
8922	-9999.25	-9999.25	N/A	IC-N/A	1576.6843	-1036.9843
8929	-9999.25	-9999.25	N/A	IC-N/A	1757.293	-1053.893
8931	-9999.25	-9999.25	N/A	IC-N/A	1755.7275	-1049.6275
8942	-9999.25	-9999.25	N/A	IC-N/A	1770.5619	-1098.6619
8949	-9999.25	-9999.25	N/A	IC-N/A	1831.7953	-1137.9953
8950	-9999.25	-9999.25	N/A	IC-N/A	1828.6224	-1129.3224
8966	1714.00	-986.10	P on log	LP-ADR	1714	-986.1
8970	1535.00	-928.90	P on log	LP-ADR	1535	-928.9
8974	1806.00	-1115.60	P on log	LP-ADR	1806	-1115.6
8979	1613.00	-1039.40	P on log	LP-ADR	1613	-1039.4
8985	1200.00	-546.10	P on log	LP-ADR	1200	-546.1
9892	-9999.25	-9999.25	N/P	LP-ADR	1010	-392.1
9948	-9999.25	-9999.25	N/P	LP-ADR	860	-347.5
10018	-9999.25	-9999.25	N/P	LP-ADR	1008	-456
10037	-9999.25	-9999.25	N/P	LP-ADR	858	-205.3
12499	786.00	-254.50	P on log	LP-ADR	786	-254.5
12520	1224.00	-601.30	P on log	LP-ADR	1224	-601.3
12534	-9999.25	-9999.25	N/A	IC-N/A	1139.6862	-435.1862
12535	-9999.25	-9999.25	N/A	IC-N/A	1071.5061	-405.8061
12557	-9999.25	-9999.25	N/A	IC-N/A	1062.8866	-402.9866
12581	1297.00	-661.10	P on log	LP-ADR	1297	-661.1
12585	1206.00	-626.00	P on log	LP-ADR	1206	-626
12588	1402.00	-687.20	P on log	LP-ADR	1402	-687.2
12589	1355.00	-629.20	P on log	LP-ADR	1355	-629.2
12611	2130.00	-1377.70	P	DP-ADR	2130	-1377.7
12623	-9999.25	-9999.25	N/A	IC-N/A	1785.0303	-1298.3303
12632	1790.00	-1299.70	P on log	LP-ADR	1790	-1299.7
12659	1488.00	-798.20	P on log	LP-ADR	1488	-798.2
16942	-9999.25	-9999.25	N/A	IC-N/A	1007.3029	-318.8029
16946	606.00	53.30	P	DP-FMRP	606	53.3
16951	-9999.25	-9999.25	N/P	LP-ADR	527	97.2
17423	-9999.25	-9999.25	N/P	LP-ADR	262	218.5

17428	1098.00	-565.30	P on log	LP-ADR	1098	-565.3
17448	936.00	-359.70	P on log	LP-ADR	936	-359.7
17470	597.00	-118.60	P on log	LP-ADR	597	-118.6
17473	593.00	-49.00	P on log	LP-ADR	593	-49
17494	1386.00	-748.70	P on log	LP-ADR	1386	-748.7
17496	1431.00	-797.60	P on log	LP-ADR	1431	-797.6
KGS REC	T4_CLCK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
17550	865.00	-406.50	P on log	LP-ADR	865	-406.5
17582	-9999.25	-9999.25	N/A	IC-N/A	624.1268	24.9732
17588	1853.00	-1443.30	P on log	LP-ADR	1853	-1443.3
17592	1506.00	-913.10	P on log	LP-ADR	1506	-913.1
17660	1252.00	-634.90	P on log	LP-ADR	1252	-634.9
17687	1192.00	-584.60	P on log	LP-ADR	1192	-584.6
18752	-9999.25	-9999.25	N/A	IC-N/A	3502.3424	-3007.9424
21277	-9999.25	-9999.25	N/P	LP-ADR	310	486.4
21322	-9999.25	-9999.25	N/P	LP-ADR	392	377.8
22861	-9999.25	-9999.25	N/P	LP-ADR	1102	-539.3
23475	1305.00	-686.10	P on log	LP-ADR	1305	-686.1
23477	1102.00	-414.90	P on log	LP-ADR	1102	-414.9
24414	-9999.25	-9999.25	N/A	IC-N/A	478.5221	93.4779
24513	854.00	-230.40	P on log	LP-ADR	854	-230.4
24518	-9999.25	-9999.25	N/P	LP-ADR	532	33.8
24520	-9999.25	-9999.25	N/A	IC-N/A	416.24106	190.05894
24533	1324.00	-692.40	P on log	LP-ADR	1324	-692.4
24862	1190.00	-512.00	P on log	LP-ADR	1190	-512
24878	359.00	226.30	P on log	LP-ADR	359	226.3
24985	1228.00	-585.40	P on log	LP-ADR	1228	-585.4
24987	-9999.25	-9999.25	N/A	IC-N/A	1226.5466	-579.4466
25006	-9999.25	-9999.25	N/A	IC-N/A	1289.4526	-631.0526
25007	-9999.25	-9999.25	N/A	IC-N/A	428.66925	235.33075
25065	-9999.25	-9999.25	N/A	IC-N/A	309.15836	321.04164
25165	2350.00	-1741.30	P on log	LP-ADR	2350	-1741.3
26194	-9999.25	-9999.25	N/P	LP-ADR	600	89.3
26231	-9999.25	-9999.25	N/A	IC-N/A	1798.116	-1313.616
26540	-9999.25	-9999.25	N/A	IC-N/A	1951.4474	-1510.0474
26541	-9999.25	-9999.25	N/A	IC-N/A	1879.2743	-1468.0743
26542	-9999.25	-9999.25	N/A	IC-N/A	1956.2649	-1349.1649
26543	-9999.25	-9999.25	N/A	IC-N/A	2122.521	-1465.221
26544	-9999.25	-9999.25	N/A	IC-N/A	2176.269	-1512.869
26549	-9999.25	-9999.25	N/A	IC-N/A	680.0844	-38.0844
26609	934.00	-371.90	P on log	LP-ADR	934	-371.9
26970	1237.00	-715.40	P on log	LP-ADR	1237	-715.4

27009	-9999.25	-9999.25	N/A	IC-N/A	1855.652	-1316.852
27145	1141.00	-523.30	P on log	LP-ADR	1141	-523.3
27146	-9999.25	-9999.25	N/A	IC-N/A	1314.0266	-713.5266
27367	1339.00	-755.60	P on log	LP-ADR	1339	-755.6
27852	-9999.25	-9999.25	N/A	IC-N/A	809.8403	-199.3403
28285	1333.00	-670.00	P on log	LP-ADR	1333	-670
KGS REC	T4_CLK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
28442	-9999.25	-9999.25	N/A	IC-N/A	1758.6394	-1074.6394
28447	-9999.25	-9999.25	N/A	IC-N/A	1779.6703	-1080.5703
28458	-9999.25	-9999.25	N/A	IC-N/A	1566.696	-1033.396
28470	-9999.25	-9999.25	N/A	IC-N/A	1702.8617	-968.8617
29044	1112.00	-613.70	P on log	LP-ADR	1112	-613.7
29071	1300.00	-622.20	P on log	LP-ADR	1300	-622.2
29102	1332.00	-741.20	P on log	LP-ADR	1332	-741.2
30067	-9999.25	-9999.25	N/P	LP-ADR	652	11.9
30090	-9999.25	-9999.25	N/A	IC-N/A	1799.211	-1320.811
30092	-9999.25	-9999.25	N/A	IC-N/A	1085.4289	-487.9289
30117	768.00	-283.50	P on log	LP-ADR	768	-283.5
30118	1044.00	-443.40	P on log	LP-ADR	1044	-443.4
30483	-9999.25	-9999.25	N/A	IC-N/A	498.87403	135.62597
30670	1391.00	-844.60	P on log	LP-ADR	1391	-844.6
30794	-9999.25	-9999.25	N/A	IC-N/A	2059.639	-1295.539
30795	-9999.25	-9999.25	N/A	IC-N/A	1838.484	-1303.684
30824	-9999.25	-9999.25	N/P	LP-ADR	221	600.1
31005	-9999.25	-9999.25	N/P	LP-ADR	280	430.1
31018	-9999.25	-9999.25	N/A	IC-N/A	1810.836	-1308.636
31120	-9999.25	-9999.25	N/A	IC-N/A	290.44961	466.45039
31264	-9999.25	-9999.25	N/A	IC-N/A	1388.2724	-907.9724
31394	-9999.25	-9999.25	N/P	LP-ADR	873	-256.1
32126	922.00	-419.40	P on log	LP-ADR	922	-419.4
32468	1007.00	-406.50	P on log	LP-ADR	1007	-406.5
32641	-9999.25	-9999.25	N/P	LP-ADR	338	296.2
32959	-9999.25	-9999.25	N/P	LP-ADR	244	405.5
33057	664.00	-39.70	P on log	LP-ADR	664	-39.7
33896	1360.00	-691.80	P on log	LP-ADR	1360	-691.8
34176	1216.00	-603.90	P on log	LP-ADR	1216	-603.9
34251	1237.00	-719.50	P on log	LP-ADR	1237	-719.5
34413	-9999.25	-9999.25	N/A	IC-N/A	302.73183	228.46817
34743	1278.00	-724.60	P on log	LP-ADR	1278	-724.6
35139	894.00	-445.20	P on log	LP-ADR	894	-445.2
35370	1213.00	-455.60	P on log	LP-ADR	1213	-455.6
36020	1206.00	-573.60	P on log	LP-ADR	1206	-573.6

36251	-9999.25	-9999.25	N/A	IC-N/A	1773.734	-1250.734
36373	-9999.25	-9999.25	N/A	IC-N/A	1812.872	-1297.072
36411	1466.00	-849.10	P on log	LP-ADR	1466	-849.1
36701	1134.00	-583.90	P on log	LP-ADR	1134	-583.9
37056	616.00	-7.40	P on log	LP-ADR	616	-7.4
37057	554.00	33.10	P on log	LP-ADR	554	33.1
KGS REC	T4_CLK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
37064	-9999.25	-9999.25	N/P	LP-ADR	454	107.8
37649	910.00	-472.00	P on log	LP-ADR	910	-472
37651	1083.00	-546.40	P on log	LP-ADR	1083	-546.4
37710	934.00	-459.40	P on log	LP-ADR	934	-459.4
37719	1025.00	-459.20	P on log	LP-ADR	1025	-459.2
37826	1211.00	-791.00	P on log	LP-ADR	1211	-791
38267	922.00	-341.80	P on log	LP-ADR	922	-341.8
38274	923.00	-369.20	P on log	LP-ADR	923	-369.2
38322	-9999.25	-9999.25	N/A	IC-N/A	1976.203	-1247.103
38426	-9999.25	-9999.25	N/P	LP-ADR	181	508.1
38932	1374.00	-826.60	P on log	LP-ADR	1374	-826.6
41548	-9999.25	-9999.25	N/A	IC-N/A	1822.941	-1275.041
41592	-9999.25	-9999.25	N/A	IC-N/A	1796.897	-1291.397
41615	1186.00	-540.80	P on log	LP-ADR	1186	-540.8
41696	-9999.25	-9999.25	N/A	IC-N/A	518.779	65.921
41697	-9999.25	-9999.25	N/A	IC-N/A	485.2143	86.0857
41725	714.00	-74.90	P on log	LP-ADR	714	-74.9
41810	686.00	-95.60	P on log	LP-ADR	686	-95.6
41947	-9999.25	-9999.25	N/A	IC-N/A	437.07137	151.72863
42211	1226.00	-601.70	P on log	LP-ADR	1226	-601.7
42252	-9999.25	-9999.25	N/A	IC-N/A	448.32806	142.97194
42524	-9999.25	-9999.25	N/A	IC-N/A	463.82898	97.37102
43185	-9999.25	-9999.25	N/P	LP-ADR	322	379.4
43186	-9999.25	-9999.25	N/A	IC-N/A	263	367.8
43551	-9999.25	-9999.25	N/A	IC-N/A	2075.664	-1350.864
43567	-9999.25	-9999.25	N/A	IC-N/A	1968.251	-1317.451
43875	1046.00	-441.40	P on log	LP-ADR	1046	-441.4
43976	-9999.25	-9999.25	N/A	IC-N/A	483.3049	132.3951
43985	-9999.25	-9999.25	N/A	IC-N/A	973.9207	-324.0207
44002	-9999.25	-9999.25	N/P	LP-ADR	787	-169.1
44194	1496.00	-983.40	P on log	LP-ADR	1496	-983.4
44391	1152.00	-419.80	P on log	LP-ADR	1152	-419.8
44511	3021.00	-2587.60	P on log	LP-ADR	3021	-2587.6
44554	-9999.25	-9999.25	N/A	IC-N/A	339.83129	417.26871
44735	1313.00	-728.90	P on log	LP-ADR	1313	-728.9

44743	-9999.25	-9999.25	N/P	LP-ADR	446	283.7
44795	935.00	-502.20	P on log	LP-ADR	935	-502.2
44796	822.00	-334.50	P on log	LP-ADR	822	-334.5
44820	1242.00	-572.70	P on log	LP-ADR	1242	-572.7
44831	-9999.25	-9999.25	N/A	IC-N/A	591.5365	79.4635
44884	960.00	-530.20	P on log	LP-ADR	960	-530.2
KGS REC	T4_CLCK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
44890	1300.00	-609.40	P on log	LP-ADR	1300	-609.4
44938	-9999.25	-9999.25	N/A	IC-N/A	536.31	61.29
44942	-9999.25	-9999.25	N/A	IC-N/A	555.3206	47.4794
44957	-9999.25	-9999.25	N/A	IC-N/A	651.7034	-111.6034
44962	1657.00	-937.70	P on log	LP-ADR	1657	-937.7
44964	1432.00	-858.60	P on log	LP-ADR	1432	-858.6
44966	-9999.25	-9999.25	N/A	IC-N/A	556.67928	28.82072
45406	1138.00	-465.00	P on log	LP-ADR	1138	-465
45408	1126.00	-555.00	P on log	LP-ADR	1126	-555
45607	1694.00	-990.10	P on log	LP-ADR	1694	-990.1
45907	1102.00	-522.80	P on log	LP-ADR	1102	-522.8
46168	-9999.25	-9999.25	N/A	IC-N/A	2058.051	-1350.751
46193	-9999.25	-9999.25	N/A	IC-N/A	1839.591	-1327.491
46768	-9999.25	-9999.25	N/A	IC-N/A	2069.618	-1365.618
46770	1195.00	-560.50	P on log	LP-ADR	1195	-560.5
46810	922.00	-325.50	P on log	LP-ADR	922	-325.5
47882	-9999.25	-9999.25	N/P	LP-ADR	243	557.1
47936	-9999.25	-9999.25	N/A	IC-N/A	2076.488	-1353.088
48080	3550.00	-3078.50	P	DP-FMRP	3550	-3078.5
48511	1209.00	-418.60	P on log	LP-ADR	1209	-418.6
48678	-9999.25	-9999.25	N/A	IC-N/A	502.4161	108.5839
48712	-9999.25	-9999.25	N/A	IC-N/A	1006.4655	-458.4655
48915	1231.00	-787.40	P on log	LP-ADR	1231	-787.4
49185	932.00	-423.10	P on log	LP-ADR	932	-423.1
49529	872.00	-282.40	P on log	LP-ADR	872	-282.4
50331	1252.00	-602.50	P on log	LP-ADR	1252	-602.5
50333	1236.00	-608.50	P on log	LP-ADR	1236	-608.5
50439	-9999.25	-9999.25	N/P	LP-ADR	917	-128.7
50832	-9999.25	-9999.25	N/P	LP-ADR	595	178.1
50878	-9999.25	-9999.25	N/P	LP-ADR	162	568.9
51143	-9999.25	-9999.25	N/P	LP-ADR	222	442.6
51478	-9999.25	-9999.25	N/A	IC-N/A	1868.313	-1353.513
51636	1134.00	-487.30	P on log	LP-ADR	1134	-487.3
53626	820.00	-208.20	P on log	LP-ADR	820	-208.2
53903	1135.00	-456.50	P on log	LP-ADR	1135	-456.5

54301	-9999.25	-9999.25	N/A	IC-N/A	2648.3742	-2240.2742
54921	-9999.25	-9999.25	N/A	IC-N/A	1357.2564	-668.2564
55626	941.00	-448.10	P on log	LP-ADR	941	-448.1
57212	1748.00	-1071.90	P on log	LP-ADR	1748	-1071.9
57253	1281.00	-541.30	P on log	LP-ADR	1281	-541.3
57369	1601.00	-856.80	P on log	LP-ADR	1601	-856.8
KGS REC	T4_CLK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
57470	1330.00	-662.70	P on log	LP-ADR	1330	-662.7
57726	1157.00	-465.40	P on log	LP-ADR	1157	-465.4
57764	-9999.25	-9999.25	N/P	LP-ADR	478	179.6
58703	-9999.25	-9999.25	N/P	LP-ADR	209	572.7
59328	1625.00	-994.30	P on log	LP-ADR	1625	-994.3
60392	-9999.25	-9999.25	N/A	IC-N/A	1663.1211	-980.8211
60463	-9999.25	-9999.25	N/A	IC-N/A	364.8065	297.9935
60620	-9999.25	-9999.25	N/A	IC-N/A	2185.5154	-1648.4154
60647	1252.00	-480.10	P on log	LP-ADR	1252	-480.1
60784	-9999.25	-9999.25	N/A	IC-N/A	2636.532	-2219.432
61104	-9999.25	-9999.25	N/A	IC-N/A	627.4102	-46.9102
61708	-9999.25	-9999.25	N/P	LP-ADR	154	565.3
61894	2404.00	-1847.70	P on log	LP-ADR	2404	-1847.7
61911	-9999.25	-9999.25	N/P	LP-ADR	232	447.8
64431	-9999.25	-9999.25	N/P	LP-ADR	477	220.9
64550	-9999.25	-9999.25	N/A	IC-N/A	1654.8768	-1225.5768
64561	897.00	-243.00	P on log	LP-ADR	897	-243
64699	1367.00	-774.20	P on log	LP-ADR	1367	-774.2
65374	1757.00	-1202.50	P on log	LP-ADR	1757	-1202.5
66140	-9999.25	-9999.25	N/P	LP-ADR	816	-158.3
66243	-9999.25	-9999.25	N/A	IC-N/A	438.25652	161.94348
66398	978.00	-519.70	P on log	LP-ADR	978	-519.7
66515	1480.00	-857.50	P on log	LP-ADR	1480	-857.5
67124	-9999.25	-9999.25	N/A	IC-N/A	316	323.8
67275	1023.00	-567.30	P on log	LP-ADR	1023	-567.3
68018	1276.00	-708.00	P on log	LP-ADR	1276	-708
69043	1152.00	-632.20	P on log	LP-ADR	1152	-632.2
69391	1026.00	-409.00	P on log	LP-ADR	1026	-409
70030	1045.00	-521.70	P on log	LP-ADR	1045	-521.7
70521	904.00	-303.50	P on log	LP-ADR	904	-303.5
70700	1120.00	-678.30	P on log	LP-ADR	1120	-678.3
71650	1338.00	-809.40	P on log	LP-ADR	1338	-809.4
72123	1386.00	-842.50	P on log	LP-ADR	1386	-842.5
74160	876.00	-287.20	P on log	LP-ADR	876	-287.2
75341	-9999.25	-9999.25	N/P	LP-ADR	250	281.2

75437	1304.00	-754.70	P on log	LP-ADR	1304	-754.7
76317	-9999.25	-9999.25	N/A	IC-N/A	761.0531	-229.9531
76798	-9999.25	-9999.25	N/A	IC-N/A	755.5254	-216.8254
77043	1038.00	-444.30	P on log	LP-ADR	1038	-444.3
77871	-9999.25	-9999.25	N/A	IC-N/A	680.0103	-179.9103
77995	1117.00	-651.30	P on log	LP-ADR	1117	-651.3
KGS REC	T4_CLCK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
78566	590.00	-29.50	P on log	LP-ADR	590	-29.5
78573	1424.00	-845.90	P on log	LP-ADR	1424	-845.9
79583	1084.00	-584.80	P on log	LP-ADR	1084	-584.8
80622	1228.00	-496.90	P on log	LP-ADR	1228	-496.9
80871	757.00	-183.50	P on log	LP-ADR	757	-183.5
81073	-9999.25	-9999.25	N/A	IC-N/A	752.3547	-179.3547
81187	-9999.25	-9999.25	N/A	IC-N/A	588.1656	-47.4656
81188	-9999.25	-9999.25	N/A	IC-N/A	605.1027	-54.1027
81454	960.00	-352.00	P on log	LP-ADR	960	-352
81821	-9999.25	-9999.25	N/A	IC-N/A	749.9724	-188.0724
82547	-9999.25	-9999.25	N/P	LP-ADR	240	413.9
82646	-9999.25	-9999.25	N/A	IC-N/A	367.56085	343.13915
82869	1372.00	-725.80	P on log	LP-ADR	1372	-725.8
82961	-9999.25	-9999.25	N/A	IC-N/A	175.15712	526.64288
83200	1258.00	-647.60	P on log	LP-ADR	1258	-647.6
83643	1233.00	-631.70	P on log	LP-ADR	1233	-631.7
84897	1398.00	-811.50	P on log	LP-ADR	1398	-811.5
85857	1138.00	-400.90	P on log	LP-ADR	1138	-400.9
85898	1478.00	-779.50	P on log	LP-ADR	1478	-779.5
86110	-9999.25	-9999.25	N/P	LP-ADR	255	600.3
86659	-9999.25	-9999.25	N/A	IC-N/A	863.3365	-325.3365
87133	832.00	-282.90	P on log	LP-ADR	832	-282.9
87342	740.00	-38.70	P on log	LP-ADR	740	-38.7
87691	1332.00	-702.70	P on log	LP-ADR	1332	-702.7
88126	2229.00	-1716.60	P on log	LP-ADR	2229	-1716.6
88310	415.00	192.10	P on log	LP-ADR	415	192.1
88519	-9999.25	-9999.25	N/P	LP-ADR	499	221.4
88720	1557.00	-1039.30	P on log	LP-ADR	1557	-1039.3
88824	1748.00	-1255.50	P on log	LP-ADR	1748	-1255.5
89627	-9999.25	-9999.25	N/A	IC-N/A	1127.4257	-603.2257
89864	1966.00	-1546.90	P	DP-FMRP	1966	-1546.9
89887	3039.00	-2638.60	P	DP-FMRP	3039	-2638.6
89889	3039.00	-2639.40	P	DP-FMRP	3039	-2639.4
90181	1224.00	-649.20	P on log	LP-ADR	1224	-649.2
91075	-9999.25	-9999.25	N/A	IC-N/A	2247.0049	-1811.2049

92068	-9999.25	-9999.25	N/P	LP-ADR	500	220.4
92622	-9999.25	-9999.25	N/A	IC-N/A	448.39334	107.10666
93190	-9999.25	-9999.25	N/A	IC-N/A	382.24946	298.35054
93217	-9999.25	-9999.25	N/P	LP-ADR	948	-201.5
100378	1323.00	-691.90	P on log	LP-ADR	1323	-691.9
101078	-9999.25	-9999.25	N/A	IC-N/A	491.7231	75.8769
KGS REC	T4_CLK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
101580	-9999.25	-9999.25	N/A	IC-N/A	871.86103	-356.96103
101593	1773.00	-1325.00	P on log	LP-ADR	1773	-1325
101596	1229.00	-636.90	P on log	LP-ADR	1229	-636.9
101599	-9999.25	-9999.25	N/A	IC-N/A	2057.3214	-1318.8214
101654	-9999.25	-9999.25	N/A	IC-N/A	357.65826	201.24174
101660	-9999.25	-9999.25	N/A	IC-N/A	939.1706	-280.3706
101732	703.00	-131.20	P on log	LP-ADR	703	-131.2
101733	1090.00	-567.30	P on log	LP-ADR	1090	-567.3
102191	-9999.25	-9999.25	N/A	IC-N/A	582.1879	-39.7879
102215	-9999.25	-9999.25	N/A	IC-N/A	496.6116	66.3884
102491	1522.00	-949.40	P on log	LP-ADR	1522	-949.4
102827	2600.00	-2143.90	P on log	LP-ADR	2600	-2143.9
103416	-9999.25	-9999.25	N/P	LP-ADR	619	0.6
103481	-9999.25	-9999.25	N/A	IC-N/A	1320.8394	-451.13938
103599	1520.00	-1081.00	P on log	LP-ADR	1520	-1081
104457	-9999.25	-9999.25	N/P	LP-ADR	760	-195.9
104458	-9999.25	-9999.25	N/P	LP-ADR	662	-69.5
104459	-9999.25	-9999.25	N/A	IC-N/A	1081.0175	-286.5175
104629	2592.00	-2135.90	P on log	LP-ADR	2592	-2135.9
105693	892.00	-293.70	P on log	LP-ADR	892	-293.7
105694	-9999.25	-9999.25	N/P	LP-ADR	484	167.8
106588	-9999.25	-9999.25	N/P	LP-ADR	202	525.2
107711	1070.00	-465.20	P on log	LP-ADR	1070	-465.2
107951	1707.00	-1120.50	P on log	LP-ADR	1707	-1120.5
108682	1312.00	-659.30	P on log	LP-ADR	1312	-659.3
108819	1323.00	-636.40	P on log	LP-ADR	1323	-636.4
109059	1283.00	-670.40	P on log	LP-ADR	1283	-670.4
109085	1196.00	-557.10	P on log	LP-ADR	1196	-557.1
109279	1681.00	-1147.80	P on log	LP-ADR	1681	-1147.8
109338	1213.00	-633.40	P on log	LP-ADR	1213	-633.4
109440	1273.00	-647.00	P on log	LP-ADR	1273	-647
109472	1269.00	-654.60	P on log	LP-ADR	1269	-654.6
109556	1496.00	-928.50	P on log	LP-ADR	1496	-928.5
109750	1279.00	-703.70	P on log	LP-ADR	1279	-703.7
109818	3616.00	-3146.70	P on log	LP-ADR	3616	-3146.7

110720	-9999.25	-9999.25	N/P	LP-ADR	1298	-434.2
110810	1229.00	-625.90	P on log	LP-ADR	1229	-625.9
110873	1260.00	-562.30	P on log	LP-ADR	1260	-562.3
111111	1882.00	-1242.30	P on log	LP-ADR	1882	-1242.3
111317	1281.00	-666.20	P on log	LP-ADR	1281	-666.2
111535	1465.00	-852.40	P on log	LP-ADR	1465	-852.4
KGS REC	T4_CLCK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
111582	1233.00	-608.50	P on log	LP-ADR	1233	-608.5
111583	1250.00	-661.30	P on log	LP-ADR	1250	-661.3
111698	-9999.25	-9999.25	N/A	IC-N/A	1291.4978	-582.0978
111711	1450.00	-775.30	P on log	LP-ADR	1450	-775.3
111826	1208.00	-507.90	P on log	LP-ADR	1208	-507.9
111833	1250.00	-716.60	P on log	LP-ADR	1250	-716.6
111866	1754.00	-1330.30	P on log	LP-ADR	1754	-1330.3
112219	1402.00	-876.90	P on log	LP-ADR	1402	-876.9
112229	-9999.25	-9999.25	N/A	IC-N/A	2115.2363	-1493.7363
112277	1275.00	-631.10	P on log	LP-ADR	1275	-631.1
112288	1788.00	-1154.30	P on log	LP-ADR	1788	-1154.3
112435	1129.00	-468.80	P on log	LP-ADR	1129	-468.8
112764	1172.00	-452.20	P on log	LP-ADR	1172	-452.2
113002	1242.00	-490.70	P on log	LP-ADR	1242	-490.7
113076	1823.00	-1127.30	P on log	LP-ADR	1823	-1127.3
113543	-9999.25	-9999.25	N/P	LP-ADR	1267	-379.8
113949	1479.00	-668.40	P on log	LP-ADR	1479	-668.4
114144	1471.00	-789.30	P on log	LP-ADR	1471	-789.3
114292	-9999.25	-9999.25	N/A	IC-N/A	2061.488	-1389.188
114341	-9999.25	-9999.25	N/A	IC-N/A	1276.5173	-573.7173
114661	2716.00	-2285.50	P on log	LP-ADR	2716	-2285.5
115223	1376.00	-613.10	P on log	LP-ADR	1376	-613.1
115312	1757.00	-961.00	P on log	LP-ADR	1757	-961
115429	1783.00	-1242.00	P on log	LP-ADR	1783	-1242
120335	-9999.25	-9999.25	N/P	LP-ADR	252	414.9
120748	1198.00	-580.60	P on log	LP-ADR	1198	-580.6
121349	-9999.25	-9999.25	N/P	LP-ADR	1032	-366.6
121595	1497.00	-827.30	P on log	LP-ADR	1497	-827.3
122123	-9999.25	-9999.25	N/P	LP-ADR	1120	-452.4
123053	-9999.25	-9999.25	N/A	IC-N/A	777.23149	-247.23149
123336	-9999.25	-9999.25	N/A	IC-N/A	951.5758	-264.5758
123654	-9999.25	-9999.25	N/A	IC-N/A	2041.516	-1339.716
123757	-9999.25	-9999.25	N/A	IC-N/A	1861.869	-1344.069
124339	-9999.25	-9999.25	N/A	IC-N/A	2141.082	-1398.082
124491	-9999.25	-9999.25	N/A	IC-N/A	2061.849	-1353.149

124493	-9999.25	-9999.25	N/A	IC-N/A	2005.63	-1388.43
124522	-9999.25	-9999.25	N/A	IC-N/A	1998.818	-1272.318
124524	-9999.25	-9999.25	N/A	IC-N/A	1867.176	-1374.876
124638	-9999.25	-9999.25	N/A	IC-N/A	2052.802	-1343.602
125043	1188.00	-489.40	P on log	LP-ADR	1188	-489.4
125506	1116.00	-263.50	P on log	LP-ADR	1116	-263.5
KGS REC	T4_CLCK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
125635	-9999.25	-9999.25	N/A	IC-N/A	673.1892	-40.6892
125769	1118.00	-353.70	P on log	LP-ADR	1118	-353.7
126005	1148.00	-490.20	P on log	LP-ADR	1148	-490.2
126648	-9999.25	-9999.25	N/A	IC-N/A	848.7692	-262.0692
126649	1170.00	-465.10	P on log	LP-ADR	1170	-465.1
126650	1205.00	-542.40	P on log	LP-ADR	1205	-542.4
126810	1014.00	-198.70	P on log	LP-ADR	1014	-198.7
127044	1134.00	-362.80	P on log	LP-ADR	1134	-362.8
127048	1054.00	-263.50	P on log	LP-ADR	1054	-263.5
127228	-9999.25	-9999.25	N/A	IC-N/A	2213.825	-1591.225
127229	-9999.25	-9999.25	N/A	IC-N/A	2394.391	-1947.091
127242	884.00	-237.10	P on log	LP-ADR	884	-237.1
127243	1134.00	-372.90	P on log	LP-ADR	1134	-372.9
127304	-9999.25	-9999.25	N/A	IC-N/A	2726.93	-2105.93
128673	2888.00	-2502.70	P on log	LP-ADR	2888	-2502.7
128777	-9999.25	-9999.25	N/A	IC-N/A	1739.023	-1192.923
129065	-9999.25	-9999.25	N/A	IC-N/A	2098.478	-1452.278
129425	2633.00	-2201.30	P on log	LP-ADR	2633	-2201.3
129907	-9999.25	-9999.25	N/A	IC-N/A	2257.487	-1637.587
129908	-9999.25	-9999.25	N/A	IC-N/A	2271.561	-1701.461
129973	-9999.25	-9999.25	N/A	IC-N/A	2333.356	-1734.256
130060	-9999.25	-9999.25	N/A	IC-N/A	2055.953	-1615.453
130135	-9999.25	-9999.25	N/A	IC-N/A	1695.998	-977.898
131875	694.00	-99.80	P on log	LP-ADR	694	-99.8
132142	2828.00	-2276.00	P on log	LP-ADR	2828	-2276
132143	2738.00	-2235.40	P on log	LP-ADR	2738	-2235.4
132325	755.00	-137.90	P on log	LP-ADR	755	-137.9
132326	718.00	-104.10	P on log	LP-ADR	718	-104.1
132327	712.00	-143.20	P on log	LP-ADR	712	-143.2
132433	2739.00	-2319.40	P on log	LP-ADR	2739	-2319.4
133831	-9999.25	-9999.25	N/A	IC-N/A	391.9307	58.1693
134591	1040.00	-444.80	P on log	LP-ADR	1040	-444.8
134670	1800.00	-1337.30	P on log	LP-ADR	1800	-1337.3
135644	1137.00	-379.70	P on log	LP-ADR	1137	-379.7
135647	1256.00	-551.70	P on log	LP-ADR	1256	-551.7

136312	1163.00	-631.30	P on log	LP-ADR	1163	-631.3
136624	-9999.25	-9999.25	N/A	IC-N/A	771.5251	-192.1251
136630	3552.00	-3092.00	P on log	LP-ADR	3552	-3092
136631	3522.00	-3087.90	P on log	LP-ADR	3522	-3087.9
137175	1619.00	-1126.90	P on log	LP-ADR	1619	-1126.9
137356	1175.00	-571.40	P on log	LP-ADR	1175	-571.4
KGS REC	T4_CLCK_t	T4_SS	T4_pres	T4_src	T4_ana_MD	T4_ana_SS
137575	834.00	-221.10	P on log	LP-ADR	834	-221.1
137576	805.00	-169.50	P on log	LP-ADR	805	-169.5
138273	-9999.25	-9999.25	N/A	IC-N/A	1388.8972	-803.9972
138396	1355.00	-778.50	P on log	LP-ADR	1355	-778.5
138644	-9999.25	-9999.25	N/A	IC-N/A	2241.406	-1689.306
139171	-9999.25	-9999.25	N/A	IC-N/A	2258.9179	-1763.6179
141283	1356.00	-893.70	P on log	LP-ADR	1356	-893.7
141285	1244.00	-661.20	P on log	LP-ADR	1244	-661.2
143084	2945.00	-2458.10	P on log	LP-ADR	2945	-2458.1
2000111	-9999.25	-9999.25	N/A	IC-N/A	220.30627	544.59373
2029993	2475.00	-1864.30	P on log	LP-ADR	2475	-1864.3
2030235	-9999.25	-9999.25	N/P	LP-ADR	251	502.9
2037542	-9999.25	-9999.25	N/A	IC-N/A	797.3078	-154.7078
2037613	-9999.25	-9999.25	N/A	IC-N/A	563.3874	166.8126
2037770	-9999.25	-9999.25	N/A	IC-N/A	942.7683	-259.6683
2039921	-9999.25	-9999.25	N/P	LP-ADR	315	193.5
2040109	-9999.25	-9999.25	N/A	IC-N/A	1094.5453	-456.3453
2040429	-9999.25	-9999.25	N/P	LP-ADR	455	247.8
2040433	1437.00	-834.40	P on log	LP-ADR	1437	-834.4
2040888	1832.00	-1412.00	P on log	LP-ADR	1832	-1412
2042187	-9999.25	-9999.25	N/A	IC-N/A	522.3046	106.8954

KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
1360	-9999.25	-9999.3	N/P	LP-ADR	263	305.6
1561	-9999.25	-9999.25	N/P	LP-ADR	182	427.7
1612	-9999.25	-9999.25	N/P	LP-ADR	368	200.7
1647	-9999.25	-9999.25	N/P	LP-ADR	389	243
1677	-9999.25	-9999.25	N/P	LP-ADR	333	347.5
2089	-9999.25	-9999.25	N/P	LP-ADR	327	368.9
2182	-9999.25	-9999.25	N/P	LP-ADR	565	138.8
2183	-9999.25	-9999.25	N/P	LP-ADR	632	35.6
2619	1750.00	-1254.80	P on log	LP-ADR	1750	-1254.8
2626	2000.00	-1551.90	P on log	LP-ADR	2000	-1551.9

2627	3379.00	-2970.00	P on log	LP-ADR	3379	-2970
2628	3282.00	-2860.30	P on log	LP-ADR	3282	-2860.3
2631	2440.00	-1754.90	P on log	LP-ADR	2440	-1754.9
8245	-9999.25	-9999.25	N/A	IC-N/A	598.8897	37.6103
8247	-9999.25	-9999.25	N/A	IC-N/A	659.0983	-7.1983
8249	1255.00	-675.60	P on log	LP-ADR	1255	-675.6
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
8254	-9999.25	-9999.25	N/A	IC-N/A	1535.5018	-917.5018
8255	-9999.25	-9999.25	N/A	IC-N/A	1421.8365	-913.8365
8268	-9999.25	-9999.25	N/A	IC-N/A	1731.6317	-968.9317
8288	-9999.25	-9999.25	N/A	IC-N/A	1896.7741	-1384.7741
8840	-9999.25	-9999.25	N/A	IC-N/A	1850.089	-1266.189
8852	-9999.25	-9999.25	N/A	IC-N/A	1929.7209	-1346.0209
8853	-9999.25	-9999.25	N/A	IC-N/A	1970.348	-1407.948
8856	-9999.25	-9999.25	N/A	IC-N/A	2310.083	-1572.183
8870	-9999.25	-9999.25	N/A	IC-N/A	2298.664	-1557.164
8884	-9999.25	-9999.25	N/A	IC-N/A	2277.238	-1535.438
8922	-9999.25	-9999.25	N/A	IC-N/A	1747.2453	-1207.5453
8929	-9999.25	-9999.25	N/A	IC-N/A	1923.649	-1220.249
8931	-9999.25	-9999.25	N/A	IC-N/A	1923.1305	-1217.0305
8942	-9999.25	-9999.25	N/A	IC-N/A	1961.7289	-1289.8289
8949	-9999.25	-9999.25	N/A	IC-N/A	2015.2613	-1321.4613
8950	-9999.25	-9999.25	N/A	IC-N/A	2007.0634	-1307.7634
8966	1952.00	-1224.10	P on log	LP-ADR	1952	-1224.1
8970	1590.00	-983.90	P on log	LP-ADR	1590	-983.9
8974	2249.00	-1558.60	P on log	LP-ADR	2249	-1558.6
8979	1978.00	-1404.40	P on log	LP-ADR	1978	-1404.4
8985	1332.00	-678.10	P on log	LP-ADR	1332	-678.1
9892	-9999.25	-9999.25	N/P	LP-ADR	1010	-392.1
9948	-9999.25	-9999.25	N/P	LP-ADR	860	-347.5
10018	-9999.25	-9999.25	N/P	LP-ADR	1008	-456
10037	-9999.25	-9999.25	N/P	LP-ADR	858	-205.3
12499	846.00	-314.50	P on log	LP-ADR	846	-314.5
12520	1327.00	-704.30	P on log	LP-ADR	1327	-704.3
12534	-9999.25	-9999.25	N/A	IC-N/A	1219.0624	-514.5624
12535	-9999.25	-9999.25	N/A	IC-N/A	1147.3759	-481.6759
12557	-9999.25	-9999.25	N/A	IC-N/A	1131.7424	-471.8424
12581	-9999.25	-9999.25	N/A	N/A-N/A	-9999.25	-9999.25
12585	1275.00	-695.00	P on log	LP-ADR	1275	-695
12588	-9999.25	-9999.25	N/A	IC-N/A	1504.463	-789.663
12589	1462.00	-736.20	P on log	LP-ADR	1462	-736.2
12611	-9999.25	-9999.25	N/A	N/A-N/A	-9999.25	-9999.25
12623	-9999.25	-9999.25	N/A	IC-N/A	1956.2643	-1469.5643

12632	1970.00	-1479.70	P on log	LP-ADR	1970	-1479.7
12659	-9999.25	-9999.25	N/A	IC-N/A	1608.456	-918.656
16942	-9999.25	-9999.25	N/A	IC-N/A	1076.4742	-387.9742
16946	648.00	11.30	P	DP-FM RP	648	11.3
16951	-9999.25	-9999.25	N/P	LP-ADR	527	97.2
17423	-9999.25	-9999.25	N/P	LP-ADR	262	218.5
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
17428	1180.00	-647.30	P on log	LP-ADR	1180	-647.3
17448	994.00	-417.70	P on log	LP-ADR	994	-417.7
17470	627.00	-148.60	P on log	LP-ADR	627	-148.6
17473	655.00	-111.00	P on log	LP-ADR	655	-111
17494	1502.00	-864.70	P on log	LP-ADR	1502	-864.7
17496	-9999.25	-9999.25	N/A	IC-N/A	1564.647	-931.247
17550	929.00	-470.50	P on log	LP-ADR	929	-470.5
17582	-9999.25	-9999.25	N/A	IC-N/A	652.1733	-3.0733
17588	-9999.25	-9999.25	N/A	IC-N/A	2045.224	-1635.524
17592	-9999.25	-9999.25	N/A	IC-N/A	1642.188	-1049.288
17660	1326.00	-708.90	P on log	LP-ADR	1326	-708.9
17687	1248.00	-640.60	P on log	LP-ADR	1248	-640.6
18752	-9999.25	-9999.25	N/A	IC-N/A	3750.6364	-3256.2364
21277	-9999.25	-9999.25	N/P	LP-ADR	310	486.4
21322	-9999.25	-9999.25	N/P	LP-ADR	392	377.8
22861	-9999.25	-9999.25	N/P	LP-ADR	1102	-539.3
23475	1412.00	-793.10	P on log	LP-ADR	1412	-793.1
23477	1147.00	-459.90	P on log	LP-ADR	1147	-459.9
24414	-9999.25	-9999.25	N/A	IC-N/A	503.7244	68.2756
24513	924.00	-300.40	P on log	LP-ADR	924	-300.4
24518	-9999.25	-9999.25	N/P	LP-ADR	532	33.8
24520	-9999.25	-9999.25	N/A	IC-N/A	429.02446	177.27554
24533	1440.00	-808.40	P on log	LP-ADR	1440	-808.4
24862	1256.00	-578.00	P on log	LP-ADR	1256	-578
24878	396.00	189.30	P on log	LP-ADR	396	189.3
24985	1304.00	-661.40	P on log	LP-ADR	1304	-661.4
24987	-9999.25	-9999.25	N/A	IC-N/A	1281.1884	-634.0884
25006	-9999.25	-9999.25	N/A	IC-N/A	1391.4156	-733.0156
25007	-9999.25	-9999.25	N/A	IC-N/A	438.88035	225.11965
25065	-9999.25	-9999.25	N/A	IC-N/A	313.06674	317.13326
25165	2838.00	-2229.30	P on log	LP-ADR	2838	-2229.3
26194	-9999.25	-9999.25	N/P	LP-ADR	600	89.3
26231	-9999.25	-9999.25	N/A	IC-N/A	2009.796	-1525.296
26540	-9999.25	-9999.25	N/A	IC-N/A	2127.6784	-1686.2784
26541	-9999.25	-9999.25	N/A	IC-N/A	2046.7163	-1635.5163

26542	-9999.25	-9999.25	N/A	IC-N/A	2094.4119	-1487.3119
26543	-9999.25	-9999.25	N/A	IC-N/A	2417.447	-1760.147
26544	-9999.25	-9999.25	N/A	IC-N/A	2472.292	-1808.892
26549	-9999.25	-9999.25	N/A	IC-N/A	714.1367	-72.1367
26609	1033.00	-470.90	P on log	LP-ADR	1033	-470.9
26970	1320.00	-798.40	P on log	LP-ADR	1320	-798.4
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
27009	-9999.25	-9999.25	N/A	IC-N/A	2066.254	-1527.454
27145	1222.00	-604.30	P on log	LP-ADR	1222	-604.3
27146	-9999.25	-9999.25	N/A	IC-N/A	1398.1184	-797.6184
27367	1478.00	-894.60	P on log	LP-ADR	1478	-894.6
27852	-9999.25	-9999.25	N/A	IC-N/A	852.8009	-242.3009
28285	-9999.25	-9999.25	N/A	IC-N/A	1436.776	-773.776
28442	-9999.25	-9999.25	N/A	IC-N/A	1948.8884	-1264.8884
28447	-9999.25	-9999.25	N/A	IC-N/A	1964.5863	-1265.4863
28458	-9999.25	-9999.25	N/A	IC-N/A	1728.14	-1194.84
28470	-9999.25	-9999.25	N/A	IC-N/A	1812.4697	-1078.4697
29044	1234.00	-735.70	P on log	LP-ADR	1234	-735.7
29071	1405.00	-727.20	P on log	LP-ADR	1405	-727.2
29102	1437.00	-846.20	P on log	LP-ADR	1437	-846.2
30067	-9999.25	-9999.25	N/P	LP-ADR	652	11.9
30090	-9999.25	-9999.25	N/A	IC-N/A	1994.995	-1516.595
30092	-9999.25	-9999.25	N/A	IC-N/A	1171.4341	-573.9341
30117	827.00	-342.50	P on log	LP-ADR	827	-342.5
30118	1112.00	-511.40	P on log	LP-ADR	1112	-511.4
30483	-9999.25	-9999.25	N/A	IC-N/A	519.06603	115.43397
30670	-9999.25	-9999.25	N/A	IC-N/A	1510.857	-964.457
30794	-9999.25	-9999.25	N/A	IC-N/A	2292.474	-1528.374
30795	-9999.25	-9999.25	N/A	IC-N/A	2053.065	-1518.265
30824	-9999.25	-9999.25	N/P	LP-ADR	221	600.1
31005	-9999.25	-9999.25	N/P	LP-ADR	280	430.1
31018	-9999.25	-9999.25	N/A	IC-N/A	2008.904	-1506.704
31120	-9999.25	-9999.25	N/A	IC-N/A	296.9628	459.9372
31264	-9999.25	-9999.25	N/A	IC-N/A	1529.3954	-1049.0954
31394	-9999.25	-9999.25	N/P	LP-ADR	873	-256.1
32126	982.00	-479.40	P on log	LP-ADR	982	-479.4
32468	1100.00	-499.50	P on log	LP-ADR	1100	-499.5
32641	-9999.25	-9999.25	N/P	LP-ADR	338	296.2
32959	-9999.25	-9999.25	N/P	LP-ADR	244	405.5
33057	717.00	-92.70	P on log	LP-ADR	717	-92.7
33896	-9999.25	-9999.25	N/A	IC-N/A	1475.315	-807.115
34176	1274.00	-661.90	P on log	LP-ADR	1274	-661.9

34251	1378.00	-860.50	P on log	LP-ADR	1378	-860.5
34413	-9999.25	-9999.25	N/A	IC-N/A	313.01103	218.18897
34743	1377.00	-823.60	P on log	LP-ADR	1377	-823.6
35139	966.00	-517.20	P on log	LP-ADR	966	-517.2
35370	1282.00	-524.60	P on log	LP-ADR	1282	-524.6
36020	-9999.25	-9999.25	N/A	IC-N/A	1301.8796	-669.4796
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
36251	-9999.25	-9999.25	N/A	IC-N/A	1978.933	-1455.933
36373	-9999.25	-9999.25	N/A	IC-N/A	2031.199	-1515.399
36411	1546.00	-929.10	P on log	LP-ADR	1546	-929.1
36701	1243.00	-692.90	P on log	LP-ADR	1243	-692.9
37056	654.00	-45.40	P on log	LP-ADR	654	-45.4
37057	578.00	9.10	P on log	LP-ADR	578	9.1
37064	-9999.25	-9999.25	N/P	LP-ADR	454	107.8
37649	970.00	-532.00	P on log	LP-ADR	970	-532
37651	-9999.25	-9999.25	N/A	IC-N/A	1173.4487	-636.8487
37710	997.00	-522.40	P on log	LP-ADR	997	-522.4
37719	1091.00	-525.20	P on log	LP-ADR	1091	-525.2
37826	-9999.25	-9999.25	N/A	IC-N/A	1349.799	-929.799
38267	984.00	-403.80	P on log	LP-ADR	984	-403.8
38274	978.00	-424.20	P on log	LP-ADR	978	-424.2
38322	-9999.25	-9999.25	N/A	IC-N/A	2175.178	-1446.078
38426	-9999.25	-9999.25	N/P	LP-ADR	181	508.1
38932	1492.00	-944.60	P on log	LP-ADR	1492	-944.6
41548	-9999.25	-9999.25	N/A	IC-N/A	2017.785	-1469.885
41592	-9999.25	-9999.25	N/A	IC-N/A	1989.507	-1484.007
41615	1261.00	-615.80	P on log	LP-ADR	1261	-615.8
41696	-9999.25	-9999.25	N/A	IC-N/A	542.5481	42.1519
41697	-9999.25	-9999.25	N/A	IC-N/A	508.3328	62.9672
41725	750.00	-110.90	P on log	LP-ADR	750	-110.9
41810	716.00	-125.60	P on log	LP-ADR	716	-125.6
41947	-9999.25	-9999.25	N/A	IC-N/A	452.66307	136.13693
42211	-9999.25	-9999.25	N/A	IC-N/A	1292.757	-668.457
42252	-9999.25	-9999.25	N/A	IC-N/A	464.43746	126.86254
42524	-9999.25	-9999.25	N/A	IC-N/A	482.39818	78.80182
43185	-9999.25	-9999.25	N/P	LP-ADR	322	379.4
43186	-9999.25	-9999.25	N/A	IC-N/A	263	367.8
43551	-9999.25	-9999.25	N/A	IC-N/A	2289.797	-1564.997
43567	-9999.25	-9999.25	N/A	IC-N/A	2184.404	-1533.604
43875	1125.00	-520.40	P on log	LP-ADR	1125	-520.4
43976	-9999.25	-9999.25	N/A	IC-N/A	498.9988	116.7012
43985	-9999.25	-9999.25	N/A	IC-N/A	989.9488	-340.0488

44002	-9999.25	-9999.25	N/P	LP-ADR	787	-169.1
44194	1681.00	-1168.40	P on log	LP-ADR	1681	-1168.4
44391	1183.00	-450.80	P on log	LP-ADR	1183	-450.8
44511	3342.00	-2908.60	P on log	LP-ADR	3342	-2908.6
44554	-9999.25	-9999.25	N/A	IC-N/A	341.46225	415.63775
44735	-9999.25	-9999.25	N/A	IC-N/A	1399.8889	-815.7889
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
44743	-9999.25	-9999.25	N/P	LP-ADR	446	283.7
44795	1013.00	-580.20	P on log	LP-ADR	1013	-580.2
44796	891.00	-403.50	P on log	LP-ADR	891	-403.5
44820	1314.00	-644.70	P on log	LP-ADR	1314	-644.7
44831	-9999.25	-9999.25	N/A	IC-N/A	621.8299	49.1701
44884	1056.00	-626.20	P on log	LP-ADR	1056	-626.2
44890	-9999.25	-9999.25	N/A	IC-N/A	1398.7874	-708.1874
44938	-9999.25	-9999.25	N/A	IC-N/A	564.5433	33.0567
44942	-9999.25	-9999.25	N/A	IC-N/A	582.3743	20.4257
44957	-9999.25	-9999.25	N/A	IC-N/A	691.3476	-151.2476
44962	1804.00	-1084.70	P on log	LP-ADR	1804	-1084.7
44964	-9999.25	-9999.25	N/A	IC-N/A	1532.374	-958.974
44966	-9999.25	-9999.25	N/A	IC-N/A	577.70408	7.79592
45406	1214.00	-541.00	P on log	LP-ADR	1214	-541
45408	-9999.25	-9999.25	N/A	IC-N/A	1207.4079	-636.4079
45607	-9999.25	-9999.25	N/A	IC-N/A	1837.893	-1133.993
45907	-9999.25	-9999.25	N/A	IC-N/A	1190.5364	-611.3364
46168	-9999.25	-9999.25	N/A	IC-N/A	2276.395	-1569.095
46193	-9999.25	-9999.25	N/A	IC-N/A	2054.209	-1542.109
46768	-9999.25	-9999.25	N/A	IC-N/A	2275.164	-1571.164
46770	1266.00	-631.50	P on log	LP-ADR	1266	-631.5
46810	-9999.25	-9999.25	N/A	IC-N/A	986.3347	-389.8347
47882	-9999.25	-9999.25	N/P	DP-ADR	243	557.1
47936	-9999.25	-9999.25	N/A	IC-N/A	2305.077	-1581.677
48080	3830.00	-3358.5	P	DP-FMRP	3830	-3358.5
48511	1284.00	-493.60	P on log	LP-ADR	1284	-493.6
48678	-9999.25	-9999.25	N/A	IC-N/A	519.7577	91.2423
48712	-9999.25	-9999.25	N/A	IC-N/A	1089.7608	-541.7608
48915	-9999.25	-9999.25	N/A	IC-N/A	1332.683	-889.083
49185	1002.00	-493.10	P on log	LP-ADR	1002	-493.1
49529	-9999.25	-9999.25	N/A	IC-N/A	933.4039	-343.8039
50331	1352.00	-702.50	P on log	LP-ADR	1352	-702.5
50333	1340.00	-712.50	P on log	LP-ADR	1340	-712.5
50439	-9999.25	-9999.25	N/P	LP-ADR	917	-128.7
50832	-9999.25	-9999.25	N/P	LP-ADR	595	178.1

50878	-9999.25	-9999.25	N/P	LP-ADR	162	568.9
51143	-9999.25	-9999.25	N/P	LP-ADR	222	442.6
51478	-9999.25	-9999.25	N/A	IC-N/A	2065.616	-1550.816
51636	1226.00	-579.30	P on log	LP-ADR	1226	-579.3
53626	873.00	-261.20	P on log	LP-ADR	873	-261.2
53903	-9999.25	-9999.25	N/A	IC-N/A	1222.1655	-543.6655
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
54301	-9999.25	-9999.25	N/A	IC-N/A	2969.5522	-2561.4522
54921	-9999.25	-9999.25	N/A	IC-N/A	1414.9986	-725.9986
55626	-9999.25	-9999.25	N/A	IC-N/A	1012.988	-520.088
57212	1988.00	-1311.90	P on log	LP-ADR	1988	-1311.9
57253	1364.00	-624.30	P on log	LP-ADR	1364	-624.3
57369	1678.00	-933.80	P on log	LP-ADR	1678	-933.8
57470	1434.00	-766.70	P on log	LP-ADR	1434	-766.7
57726	1194.00	-502.40	P on log	LP-ADR	1194	-502.4
57764	-9999.25	-9999.25	N/P	LP-ADR	478	179.6
58703	-9999.25	-9999.25	N/P	LP-ADR	209	572.7
59328	1755.00	-1124.30	P on log	LP-ADR	1755	-1124.3
60392	-9999.25	-9999.25	N/A	IC-N/A	1832.4241	-1150.1241
60463	-9999.25	-9999.25	N/A	IC-N/A	376.0656	286.7344
60620	-9999.25	-9999.25	N/A	IC-N/A	2417.1004	-1880.0004
60647	-9999.25	-9999.25	N/A	IC-N/A	1331.195	-559.295
60784	-9999.25	-9999.25	N/A	IC-N/A	2954.651	-2537.551
61104	-9999.25	-9999.25	N/A	IC-N/A	663.6894	-83.1894
61708	-9999.25	-9999.25	N/P	LP-ADR	154	565.3
61894	2686.00	-2129.70	P on log	LP-ADR	2686	-2129.7
61911	-9999.25	-9999.25	N/P	LP-ADR	232	447.8
64431	-9999.25	-9999.25	N/P	LP-ADR	477	220.9
64550	-9999.25	-9999.25	N/A	IC-N/A	1797.5978	-1368.2978
64561	951.00	-297.00	P on log	LP-ADR	951	-297
64699	1503.00	-910.20	P on log	LP-ADR	1503	-910.2
65374	-9999.25	-9999.25	N/A	IC-N/A	1925.235	-1370.735
66140	-9999.25	-9999.25	N/P	LP-ADR	816	-158.3
66243	-9999.25	-9999.25	N/A	IC-N/A	452.31062	147.88938
66398	1056.00	-597.70	P on log	LP-ADR	1056	-597.7
66515	-9999.25	-9999.25	N/A	IC-N/A	1567.8791	-945.3791
67124	-9999.25	-9999.25	N/A	IC-N/A	317.4655	322.3345
67275	-9999.25	-9999.25	N/A	IC-N/A	1122.0713	-666.3713
68018	-9999.25	-9999.25	N/A	IC-N/A	1395.27	-827.27
69043	1206.00	-686.20	P on log	LP-ADR	1206	-686.2
69391	-9999.25	-9999.25	N/A	IC-N/A	1087.3296	-470.3296
70030	1126.00	-602.70	P on log	LP-ADR	1126	-602.7

70521	974.00	-373.50	P on log	LP-ADR	974	-373.5
70700	1265.00	-823.30	P on log	LP-ADR	1265	-823.3
71650	-9999.25	-9999.25	N/A	IC-N/A	1444.577	-915.977
72123	-9999.25	-9999.25	N/A	IC-N/A	1493.513	-950.013
74160	-9999.25	-9999.25	N/A	IC-N/A	939.3226	-350.5226
75341	-9999.25	-9999.25	N/P	LP-ADR	250	281.2
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
75437	1396.00	-846.70	P on log	LP-ADR	1396	-846.7
76317	-9999.25	-9999.25	N/A	IC-N/A	810.1295	-279.0295
76798	-9999.25	-9999.25	N/A	IC-N/A	803.61	-264.91
77043	1132.00	-538.30	P	LP-FMRP	1132	-538.3
77871	-9999.25	-9999.25	N/A	IC-N/A	730.3027	-230.2027
77995	-9999.25	-9999.25	N/A	IC-N/A	1226.491	-760.791
78566	604.00	-43.50	P on log	LP-ADR	604	-43.5
78573	1530.00	-951.90	P on log	LP-ADR	1530	-951.9
79583	1185.00	-685.80	P on log	LP-ADR	1185	-685.8
80622	1320.00	-588.90	P on log	LP-ADR	1320	-588.9
80871	798.00	-224.50	P on log	LP-ADR	798	-224.5
81073	-9999.25	-9999.25	N/A	IC-N/A	795.9581	-222.9581
81187	-9999.25	-9999.25	N/A	IC-N/A	621.9882	-81.2882
81188	-9999.25	-9999.25	N/A	IC-N/A	639.1478	-88.1478
81454	1014.00	-406.00	P on log	LP-ADR	1014	-406
81821	-9999.25	-9999.25	N/A	IC-N/A	797.6552	-235.7552
82547	-9999.25	-9999.25	N/P	LP-ADR	240	413.9
82646	-9999.25	-9999.25	N/A	IC-N/A	375.43951	335.26049
82869	1505.00	-858.80	P on log	LP-ADR	1505	-858.8
82961	-9999.25	-9999.25	N/A	IC-N/A	178.59134	523.20866
83200	-9999.25	-9999.25	N/A	IC-N/A	1327.3514	-716.9514
83643	-9999.25	-9999.25	N/A	IC-N/A	1306.4074	-705.1074
84897	1518.00	-931.50	P on log	LP-ADR	1518	-931.5
85857	1211.00	-473.90	P on log	LP-ADR	1211	-473.9
85898	-9999.25	-9999.25	N/A	IC-N/A	1560.1256	-861.6256
86110	-9999.25	-9999.25	N/P	DP-ADR	255	600.3
86659	-9999.25	-9999.25	N/A	IC-N/A	918.1465	-380.1465
87133	874.00	-324.90	P on log	LP-ADR	874	-324.9
87342	754.00	-52.70	P on log	LP-ADR	754	-52.7
87691	-9999.25	-9999.25	N/A	IC-N/A	1411.1313	-781.8313
88126	2500.00	-1987.60	P on log	LP-ADR	2500	-1987.6
88310	465.00	142.10	P on log	LP-ADR	465	142.1
88519	-9999.25	-9999.25	N/P	LP-ADR	499	221.4
88720	1718.00	-1200.30	P on log	LP-ADR	1718	-1200.3
88824	-9999.25	-9999.25	N/A	IC-N/A	1949.897	-1457.397

89627	-9999.25	-9999.25	N/A	IC-N/A	1223.237	-699.037
89864	-9999.25	-9999.25	N/A	IC-N/A	2188.836	-1769.736
89887	-9999.25	-9999.25	N/A	IC-N/A	3334.014	-2933.614
89889	-9999.25	-9999.3	N/A	IC-N/A	3327.041	-2927.441
90181	1281.00	-706.20	P on log	LP-ADR	1281	-706.2
91075	-9999.25	-9999.25	N/A	IC-N/A	2497.6629	-2061.8629
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
92068	-9999.25	-9999.25	N/P	LP-ADR	500	220.4
92622	-9999.25	-9999.25	N/A	IC-N/A	466.79194	88.70806
93190	-9999.25	-9999.25	N/A	IC-N/A	386.5566	294.04340
93217	-9999.25	-9999.25	N/P	LP-ADR	948	-201.5
100378	1395.00	-763.90	P on log	LP-ADR	1395	-763.9
101078	-9999.25	-9999.25	N/A	IC-N/A	514.4603	53.1397
101580	-9999.25	-9999.25	N/A	IC-N/A	883.64873	-368.74873
101593	-9999.25	-9999.25	N/A	IC-N/A	1948.952	-1500.952
101596	-9999.25	-9999.25	N/A	IC-N/A	1291.4211	-699.3211
101599	-9999.25	-9999.25	N/A	IC-N/A	2213.8874	-1475.3874
101654	-9999.25	-9999.25	N/A	IC-N/A	367.85386	191.04614
101660	-9999.25	-9999.25	N/A	IC-N/A	964.6457	-305.8457
101732	736.00	-164.20	P on log	LP-ADR	736	-164.2
101733	-9999.25	-9999.25	N/A	IC-N/A	1182.0645	-659.3645
102191	-9999.25	-9999.25	N/A	IC-N/A	613.8563	-71.4563
102215	-9999.25	-9999.25	N/A	IC-N/A	521.4366	41.5634
102491	1656.00	-1083.40	P on log	LP-ADR	1656	-1083.4
102827	2843.00	-2386.90	P on log	LP-ADR	2843	-2386.9
103416	-9999.25	-9999.25	N/P	LP-ADR	619	0.6
103481	-9999.25	-9999.25	N/A	IC-N/A	1330.3272	-460.62721
103599	-9999.25	-9999.25	N/A	IC-N/A	1668.817	-1229.817
104457	-9999.25	-9999.25	N/P	LP-ADR	760	-195.9
104458	-9999.25	-9999.25	N/P	LP-ADR	662	-69.5
104459	-9999.25	-9999.25	N/A	IC-N/A	1106.1226	-311.6226
104629	2842.00	-2385.90	P on log	LP-ADR	2842	-2385.9
105693	962.00	-363.70	P on log	LP-ADR	962	-363.7
105694	-9999.25	-9999.25	N/P	LP-ADR	484	167.8
106588	-9999.25	-9999.25	N/P	LP-ADR	202	525.2
107711	1262.00	-657.20	P on log	LP-ADR	1262	-657.2
107951	1865.00	-1278.50	P	LP-FMRP	1865	-1278.5
108682	1375.00	-722.30	P on log	LP-ADR	1375	-722.3
108819	1382.00	-695.40	P on log	LP-ADR	1382	-695.4
109059	1312.00	-699.40	P on log	LP-ADR	1312	-699.4
109085	1224.00	-585.10	P on log	LP-ADR	1224	-585.1
109279	1872.00	-1338.80	P on log	LP-ADR	1872	-1338.8

109338	1261.00	-681.40	P on log	LP-ADR	1261	-681.4
109440	1333.00	-707.00	P on log	LP-ADR	1333	-707
109472	1327.00	-712.60	P on log	LP-ADR	1327	-712.6
109556	1597.00	-1029.50	P on log	LP-ADR	1597	-1029.5
109750	1340.00	-764.70	P on log	LP-ADR	1340	-764.7
109818	4138.00	-3668.70	P on log	LP-ADR	4138	-3668.7
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
110720	-9999.25	-9999.25	N/P	LP-ADR	1298	-434.2
110810	1278.00	-674.90	P on log	LP-ADR	1278	-674.9
110873	1378.00	-680.30	P on log	LP-ADR	1378	-680.3
111111	2070.00	-1430.30	P on log	LP-ADR	2070	-1430.3
111317	1340.00	-725.20	P on log	LP-ADR	1340	-725.2
111535	1605.00	-992.40	P on log	LP-ADR	1605	-992.4
111582	1273.00	-648.50	P on log	LP-ADR	1273	-648.5
111583	1294.00	-705.30	P on log	LP-ADR	1294	-705.3
111698	-9999.25	-9999.25	N/A	IC-N/A	1345.2239	-635.8239
111711	1572.00	-897.30	P on log	LP-ADR	1572	-897.3
111826	1282.00	-581.90	P on log	LP-ADR	1282	-581.9
111833	1304.00	-770.60	P on log	LP-ADR	1304	-770.6
111866	1940.00	-1516.3	P on log	LP-ADR	1940	-1516.3
112219	1528.00	-1002.90	P on log	LP-ADR	1528	-1002.9
112229	-9999.25	-9999.25	N/A	IC-N/A	2342.9533	-1721.4533
112277	-9999.25	-9999.25	N/A	IC-N/A	1334.3957	-690.4957
112288	1984.00	-1350.30	P on log	LP-ADR	1984	-1350.3
112435	1170.00	-509.80	P on log	LP-ADR	1170	-509.8
112764	1219.00	-499.20	P on log	LP-ADR	1219	-499.2
113002	1272.00	-520.70	P on log	LP-ADR	1272	-520.7
113076	2004.00	-1308.30	P on log	LP-ADR	2004	-1308.3
113543	-9999.25	-9999.25	N/P	LP-ADR	1267	-379.8
113949	1529.00	-718.40	P on log	LP-ADR	1529	-718.4
114144	-9999.25	-9999.25	N/A	IC-N/A	1520.2931	-838.5931
114292	-9999.25	-9999.25	N/A	IC-N/A	2297.082	-1624.782
114341	-9999.25	-9999.25	N/A	IC-N/A	1315.2192	-612.4192
114661	3163.00	-2732.50	P on log	LP-ADR	3163	-2732.5
115223	-9999.25	-9999.25	N/A	IC-N/A	1425.8384	-662.9384
115312	1877.00	-1081.00	P on log	LP-ADR	1877	-1081
115429	-9999.25	-9999.25	N/A	IC-N/A	1943.54	-1402.54
120335	-9999.25	-9999.25	N/P	LP-ADR	252	414.9
120748	-9999.25	-9999.25	N/A	IC-N/A	1248.7496	-631.3496
121349	-9999.25	-9999.25	N/P	LP-ADR	1032	-366.6
121595	1604.00	-934.30	P on log	LP-ADR	1604	-934.3
122123	-9999.25	-9999.25	N/P	LP-ADR	1120	-452.4

123053	-9999.25	-9999.25	N/A	IC-N/A	785.89063	-255.89063
123336	-9999.25	-9999.25	N/A	IC-N/A	963.412	-276.412
123654	-9999.25	-9999.25	N/A	IC-N/A	2278.498	-1576.698
123757	-9999.25	-9999.25	N/A	IC-N/A	2045.108	-1527.308
124339	-9999.25	-9999.25	N/A	IC-N/A	2360.013	-1617.013
124491	-9999.25	-9999.25	N/A	IC-N/A	2267.202	-1558.502
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_ MD	T5_ana_SS
124493	-9999.25	-9999.25	N/A	IC-N/A	2195.161	-1577.961
124522	-9999.25	-9999.25	N/A	IC-N/A	2177.407	-1450.907
124524	-9999.25	-9999.25	N/A	IC-N/A	2054.616	-1562.316
124638	-9999.25	-9999.25	N/A	IC-N/A	2305.151	-1595.951
125043	1253.00	-554.40	P on log	LP-ADR	1253	-554.4
125506	-9999.25	-9999.25	N/A	IC-N/A	1136.307	-283.807
125635	-9999.25	-9999.25	N/A	IC-N/A	697.5943	-65.0943
125769	1166.00	-401.70	P on log	LP-ADR	1166	-401.7
126005	1200.00	-542.20	P on log	LP-ADR	1200	-542.2
126648	-9999.25	-9999.25	N/A	IC-N/A	867.8018	-281.1018
126649	1228.00	-523.10	P on log	LP-ADR	1228	-523.1
126650	1245.00	-582.40	P on log	LP-ADR	1245	-582.4
126810	1078.00	-262.70	P on log	LP-ADR	1078	-262.7
127044	1165.00	-393.80	P on log	LP-ADR	1165	-393.8
127048	1084.00	-293.50	P on log	LP-ADR	1084	-293.5
127228	-9999.25	-9999.25	N/A	IC-N/A	2514.482	-1891.882
127229	-9999.25	-9999.25	N/A	IC-N/A	2699.502	-2252.202
127242	935.00	-288.10	P on log	LP-ADR	935	-288.1
127243	1176.00	-414.90	P on log	LP-ADR	1176	-414.9
127304	-9999.25	-9999.25	N/A	IC-N/A	3060.293	-2439.293
128673	-9999.25	-9999.25	N/A	IC-N/A	3099.372	-2714.072
128777	-9999.25	-9999.25	N/A	IC-N/A	2008.078	-1461.978
129065	-9999.25	-9999.25	N/A	IC-N/A	2345.622	-1699.422
129425	-9999.25	-9999.25	N/A	IC-N/A	2888.034	-2456.334
129907	-9999.25	-9999.25	N/A	IC-N/A	2579.318	-1959.418
129908	-9999.25	-9999.25	N/A	IC-N/A	2594.543	-2024.443
129973	-9999.25	-9999.25	N/A	IC-N/A	2665.91	-2066.81
130060	-9999.25	-9999.25	N/A	IC-N/A	2382.967	-1942.467
130135	-9999.25	-9999.25	N/A	IC-N/A	1837.693	-1119.593
131875	724.00	-129.80	P on log	LP-ADR	724	-129.8
132142	-9999.25	-9999.25	N/A	IC-N/A	3094.364	-2542.364
132143	-9999.25	-9999.25	N/A	IC-N/A	3005.946	-2503.346
132325	829.00	-211.90	P on log	LP-ADR	829	-211.9
132326	821.00	-207.10	P on log	LP-ADR	821	-207.1
132327	794.00	-225.20	P on log	LP-ADR	794	-225.2

132433	3050.00	-2630.40	P on log	LP-ADR	3050	-2630.4
133831	-9999.25	-9999.25	N/A	IC-N/A	417.6037	32.4963
134591	1135.00	-539.80	P on log	LP-ADR	1135	-539.8
134670	2002.00	-1539.30	P on log	LP-ADR	2002	-1539.3
135644	1167.00	-409.70	P on log	LP-ADR	1167	-409.7
135647	1332.00	-627.70	P on log	LP-ADR	1332	-627.7
KGS REC	T5_RSGK_t	T5_SS	T5_pres	T5_src	T5_ana_MD	T5_ana_SS
136312	-9999.25	-9999.25	N/A	IC-N/A	1269.205	-737.505
136624	-9999.25	-9999.25	N/A	IC-N/A	819.7297	-240.3297
136630	-9999.25	-9999.25	N/A	IC-N/A	3791.194	-3331.194
136631	-9999.25	-9999.25	N/A	IC-N/A	3758.46	-3324.36
137175	1822.00	-1329.90	P on log	LP-ADR	1822	-1329.9
137356	1270.00	-666.40	P on log	LP-ADR	1270	-666.4
137575	905.00	-292.10	P on log	LP-ADR	905	-292.1
137576	842.00	-206.50	P on log	LP-ADR	842	-206.5
138273	-9999.25	-9999.25	N/A	IC-N/A	1534.5862	-949.6862
138396	-9999.25	-9999.25	N/A	IC-N/A	1495.039	-918.539
138644	-9999.25	-9999.25	N/A	IC-N/A	2472.317	-1920.217
139171	-9999.25	-9999.25	N/A	IC-N/A	2491.6069	-1996.3069
141283	-9999.25	-9999.25	N/A	IC-N/A	1484.753	-1022.453
141285	-9999.25	-9999.25	N/A	IC-N/A	1359.468	-776.668
143084	-9999.25	-9999.25	N/A	IC-N/A	3204.702	-2717.802
2000111	-9999.25	-9999.25	N/A	IC-N/A	224.5558	540.3442
2029993	-9999.25	-9999.25	N/A	IC-N/A	2688.753	-2078.053
2030235	-9999.25	-9999.25	N/P	LP-ADR	251	502.9
2037542	-9999.25	-9999.25	N/A	IC-N/A	851.6433	-209.0433
2037613	-9999.25	-9999.25	N/A	IC-N/A	590.3505	139.8495
2037770	-9999.25	-9999.25	N/A	IC-N/A	1009.0105	-325.9105
2039921	-9999.25	-9999.25	N/P	LP-ADR	315	193.5
2040109	-9999.25	-9999.25	N/A	IC-N/A	1171.7161	-533.5161
2040429	-9999.25	-9999.25	N/P	LP-ADR	455	247.8
2040433	-9999.25	-9999.25	N/A	IC-N/A	1583.371	-980.771
2040888	-9999.25	-9999.25	N/A	IC-N/A	2016.079	-1596.079
2042187	-9999.25	-9999.25	N/A	IC-N/A	543.0463	86.1537

KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
1360	263.00	305.60	P on log	LP-ADR	263	305.6
1561	182.00	427.70	P on log	LP-ADR	182	427.7
1612	368.00	200.70	P on log	LP-ADR	368	200.7

1647	389.00	243.00	P on log	LP-ADR	389	243
1677	333.00	347.50	P on log	LP-ADR	333	347.5
2089	327.00	368.90	P on log	LP-ADR	327	368.9
2182	565.00	138.80	P on log	LP-ADR	565	138.8
2183	632.00	35.60	P on log	LP-ADR	632	35.6
2619	1786.00	-1290.80	P on log	LP-ADR	1786	-1290.8
2626	2052.00	-1603.90	P on log	LP-ADR	2052	-1603.9
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
2627	3458.00	-3049.00	P on log	LP-ADR	3458	-3049
2628	3360.00	-2938.30	P on log	LP-ADR	3360	-2938.3
2631	2496.00	-1810.90	P on log	LP-ADR	2496	-1810.9
8245	-9999.25	-9999.25	N/A	IC-N/A	604.71763	31.78237
8247	-9999.25	-9999.25	N/A	IC-N/A	666.35014	-14.45014
8249	1272.00	-692.60	P on log	LP-ADR	1272	-692.6
8254	-9999.25	-9999.25	N/A	IC-N/A	1565.3973	-947.3973
8255	-9999.25	-9999.25	N/A	IC-N/A	1451.2883	-943.2883
8268	-9999.25	-9999.25	N/A	IC-N/A	1761.7443	-999.0443
8288	-9999.25	-9999.25	N/A	IC-N/A	1934.4205	-1422.4205
8840	-9999.25	-9999.25	N/A	IC-N/A	1885.6615	-1301.7615
8852	-9999.25	-9999.25	N/A	IC-N/A	1966.9969	-1383.2969
8853	-9999.25	-9999.25	N/A	IC-N/A	2008.9214	-1446.5214
8856	-9999.25	-9999.25	N/A	IC-N/A	2352.1919	-1614.2919
8870	-9999.25	-9999.25	N/A	IC-N/A	2342.1778	-1600.6778
8884	-9999.25	-9999.25	N/A	IC-N/A	2318.7729	-1576.9729
8922	-9999.25	-9999.25	N/A	IC-N/A	1780.1048	-1240.4048
8929	-9999.25	-9999.25	N/A	IC-N/A	1956.4381	-1253.0381
8931	-9999.25	-9999.25	N/A	IC-N/A	1956.7357	-1250.6357
8942	-9999.25	-9999.25	N/A	IC-N/A	1997.8108	-1325.9108
8949	-9999.25	-9999.25	N/A	IC-N/A	2051.2988	-1357.4988
8950	-9999.25	-9999.25	N/A	IC-N/A	2042.9984	-1343.6984
8966	1988.00	-1260.10	P on log	LP-ADR	1988	-1260.1
8970	1608.20	-1002.10	P on log	LP-ADR	1608.2	-1002.1
8974	2274.00	-1583.60	P on log	LP-ADR	2274	-1583.6
8979	2006.00	-1432.40	P on log	LP-ADR	2006	-1432.4
8985	1347.00	-693.10	P on log	LP-ADR	1347	-693.1
9892	1010.00	-392.10	P on log	LP-ADR	1010	-392.1
9948	859.00	-346.50	P on log	LP-ADR	859	-346.5
10018	1008.00	-456.00	P on log	LP-ADR	1008	-456
10037	858.00	-205.30	P on log	LP-ADR	858	-205.3
12499	867.00	-335.50	P on log	LP-ADR	867	-335.5
12520	1362.00	-739.30	P on log	LP-ADR	1362	-739.3
12534	-9999.25	-9999.25	N/A	IC-N/A	1246.6303	-542.1303
12535	-9999.25	-9999.25	N/A	IC-N/A	1172.7967	-507.0967

12557	-9999.25	-9999.25	N/A	IC-N/A	1156.1378	-496.2378
12581	1390.00	-754.10	P	DP-FMRP	1390	-754.1
12585	1319.00	-739.00	P on log	LP-ADR	1319	-739
12588	-9999.25	-9999.25	N/A	IC-N/A	1537.6746	-822.8746
12589	-9999.25	-9999.25	N/A	IC-N/A	1495.4958	-769.6958
12611	2297.00	-1544.70	P	DP-FMRP	2297	-1544.7
12623	-9999.25	-9999.25	N/A	IC-N/A	1995.8065	-1509.1065
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
12632	1995.00	-1504.70	P on log	LP-ADR	1995	-1504.7
12659	-9999.25	-9999.25	N/A	IC-N/A	1644.0464	-954.2464
16942	-9999.25	-9999.25	N/A	IC-N/A	1099.3853	-410.8853
16946	655.00	4.30	P	DP-FMRP	655	4.3
16951	527.30	96.90	P on log	LP-ADR	527.3	96.9
17423	262.30	218.20	P on log	LP-ADR	262.3	218.2
17428	1222.00	-689.30	P on log	LP-ADR	1222	-689.3
17448	1011.10	-434.80	P on log	LP-ADR	1011.1	-434.8
17470	642.00	-163.60	P on log	LP-ADR	642	-163.6
17473	670.00	-126.00	P on log	LP-ADR	670	-126
17494	1525.00	-887.70	P on log	LP-ADR	1525	-887.7
17496	-9999.25	-9999.25	N/A	IC-N/A	1598.3047	-964.9047
17550	954.00	-495.50	P on log	LP-ADR	954	-495.5
17582	-9999.25	-9999.25	N/A	IC-N/A	658.5477	-9.4477
17588	-9999.25	-9999.25	N/A	IC-N/A	2086.8199	-1677.1199
17592	-9999.25	-9999.25	N/A	IC-N/A	1678.6974	-1085.7974
17660	1364.00	-746.90	P on log	LP-ADR	1364	-746.9
17687	1274.00	-666.60	P on log	LP-ADR	1274	-666.6
18752	-9999.25	-9999.25	N/A	IC-N/A	3811.8565	-3317.4565
21277	310.00	486.40	P on log	LP-ADR	310	486.4
21322	392.00	377.80	P on log	LP-ADR	392	377.8
22861	1102.30	-539.60	P on log	LP-ADR	1102.3	-539.6
23475	1446.00	-827.10	P on log	LP-ADR	1446	-827.1
23477	1175.00	-487.90	P on log	LP-ADR	1175	-487.9
24414	-9999.25	-9999.25	N/A	IC-N/A	509.5425	62.4575
24513	939.00	-315.40	P on log	LP-ADR	939	-315.4
24518	533.50	32.30	P on log	LP-ADR	533.5	32.3
24520	-9999.25	-9999.25	N/A	IC-N/A	431.36615	174.93385
24533	1466.90	-835.30	P on log	LP-ADR	1466.9	-835.3
24862	1283.80	-605.80	P on log	LP-ADR	1283.8	-605.8
24878	406.10	179.20	P on log	LP-ADR	406.1	179.2
24985	-9999.25	-9999.25	N/A	IC-N/A	1321.0859	-678.4859
24987	-9999.25	-9999.25	N/A	IC-N/A	1298.1834	-651.0834
25006	-9999.25	-9999.25	N/A	IC-N/A	1420.4474	-762.0474

25007	-9999.25	-9999.25	N/A	IC-N/A	439.91587	224.08413
25065	-9999.25	-9999.25	N/A	IC-N/A	313.31929	316.88071
25165	2888.00	-2279.30	P on log	LP-ADR	2888	-2279.3
26194	600.00	89.30	P on log	LP-ADR	600	89.3
26231	-9999.25	-9999.25	N/A	IC-N/A	2051.9187	-1567.4187
26540	-9999.25	-9999.25	N/A	IC-N/A	2169.7163	-1728.3163
26541	-9999.25	-9999.25	N/A	IC-N/A	2087.7252	-1676.5252
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
26542	-9999.25	-9999.25	N/A	IC-N/A	2132.8165	-1525.7165
26543	-9999.25	-9999.25	N/A	IC-N/A	2464.4426	-1807.1426
26544	-9999.25	-9999.25	N/A	IC-N/A	2520.3392	-1856.9392
26549	-9999.25	-9999.25	N/A	IC-N/A	722.88748	-80.88748
26609	-9999.25	-9999.25	N/A	IC-N/A	1053.7925	-491.6925
26970	-9999.25	-9999.25	N/A	IC-N/A	1352.412	-830.812
27009	-9999.25	-9999.25	N/A	IC-N/A	2106.7382	-1567.9382
27145	-9999.25	-9999.25	N/A	IC-N/A	1253.4798	-635.7798
27146	-9999.25	-9999.25	N/A	IC-N/A	1429.3873	-828.8873
27367	1512.00	-928.60	P on log	LP-ADR	1512	-928.6
27852	-9999.25	-9999.25	N/A	IC-N/A	864.3233	-253.8233
28285	-9999.25	-9999.25	N/A	IC-N/A	1466.5696	-803.5696
28442	-9999.25	-9999.25	N/A	IC-N/A	1981.5359	-1297.5359
28447	-9999.25	-9999.25	N/A	IC-N/A	1999.2999	-1300.1999
28458	-9999.25	-9999.25	N/A	IC-N/A	1762.5591	-1229.2591
28470	-9999.25	-9999.25	N/A	IC-N/A	1837.8004	-1103.8004
29044	1266.00	-767.70	P on log	LP-ADR	1266	-767.7
29071	1428.00	-750.20	P on log	LP-ADR	1428	-750.2
29102	-9999.25	-9999.25	N/A	IC-N/A	1469.7137	-878.9137
30067	651.60	12.30	P on log	LP-ADR	651.6	12.3
30090	-9999.25	-9999.25	N/A	IC-N/A	2035.9734	-1557.5734
30092	-9999.25	-9999.25	N/A	IC-N/A	1196.7166	-599.2166
30117	844.00	-359.50	P on log	LP-ADR	844	-359.5
30118	-9999.25	-9999.25	N/A	IC-N/A	1139.6341	-539.0341
30483	-9999.25	-9999.25	N/A	IC-N/A	523.1534	111.3466
30670	-9999.25	-9999.25	N/A	IC-N/A	1546.1462	-999.7462
30794	-9999.25	-9999.25	N/A	IC-N/A	2333.95	-1569.85
30795	-9999.25	-9999.25	N/A	IC-N/A	2095.0627	-1560.2627
30824	221.00	600.10	P on log	LP-ADR	221	600.1
31005	280.00	430.10	P on log	LP-ADR	280	430.1
31018	-9999.25	-9999.25	N/A	IC-N/A	2049.5062	-1547.3062
31120	-9999.25	-9999.25	N/A	IC-N/A	298.00335	458.89665
31264	-9999.25	-9999.25	N/A	IC-N/A	1566.02	-1085.72
31394	873.00	-256.10	P on log	LP-ADR	873	-256.1

32126	1012.00	-509.40	P on log	LP-ADR	1012	-509.4
32468	1116.00	-515.50	P on log	LP-ADR	1116	-515.5
32641	337.70	296.50	P on log	LP-ADR	337.7	296.5
32959	244.00	405.50	P on log	LP-ADR	244	405.5
33057	731.00	-106.70	P on log	LP-ADR	731	-106.7
33896	-9999.25	-9999.25	N/A	IC-N/A	1506.3566	-838.1566
34176	1291.00	-678.90	P on log	LP-ADR	1291	-678.9
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
34251	-9999.25	-9999.25	N/A	IC-N/A	1410.2801	-892.7801
34413	-9999.25	-9999.25	N/A	IC-N/A	315.37853	215.82147
34743	-9999.25	-9999.25	N/A	IC-N/A	1409.5266	-856.1266
35139	-9999.25	-9999.25	N/A	IC-N/A	993.6628	-544.8628
35370	-9999.25	-9999.25	N/A	IC-N/A	1309.1198	-551.7198
36020	-9999.25	-9999.25	N/A	IC-N/A	1335.0721	-702.6721
36251	-9999.25	-9999.25	N/A	IC-N/A	2018.6436	-1495.6436
36373	-9999.25	-9999.25	N/A	IC-N/A	2073.3895	-1557.5895
36411	1578.00	-961.10	P on log	LP-ADR	1578	-961.1
36701	-9999.25	-9999.25	N/A	IC-N/A	1272.8983	-722.7983
37056	668.00	-59.40	P on log	LP-ADR	668	-59.4
37057	586.00	1.10	P on log	LP-ADR	586	1.1
37064	454.10	107.70	P on log	LP-ADR	454.1	107.7
37649	997.00	-559.00	P on log	LP-ADR	997	-559
37651	-9999.25	-9999.25	N/A	IC-N/A	1205.3175	-668.7175
37710	1024.00	-549.40	P on log	LP-ADR	1024	-549.4
37719	1116.00	-550.20	P on log	LP-ADR	1116	-550.2
37826	-9999.25	-9999.25	N/A	IC-N/A	1384.4242	-964.4242
38267	1010.00	-429.80	P on log	LP-ADR	1010	-429.8
38274	998.20	-444.40	P on log	LP-ADR	998.2	-444.4
38322	-9999.25	-9999.25	N/A	IC-N/A	2214.0435	-1484.9435
38426	181.00	508.10	P on log	LP-ADR	181	508.1
38932	-9999.25	-9999.25	N/A	IC-N/A	1527.1313	-979.7313
41548	-9999.25	-9999.25	N/A	IC-N/A	2058.0689	-1510.1689
41592	-9999.25	-9999.25	N/A	IC-N/A	2029.6482	-1524.1482
41615	-9999.25	-9999.25	N/A	IC-N/A	1290.4525	-645.2525
41696	-9999.25	-9999.25	N/A	IC-N/A	548.1039	36.5961
41697	-9999.25	-9999.25	N/A	IC-N/A	513.68489	57.61511
41725	765.00	-125.90	P on log	LP-ADR	765	-125.9
41810	733.00	-142.60	P on log	LP-ADR	733	-142.6
41947	-9999.25	-9999.25	N/A	IC-N/A	456.06614	132.73386
42211	-9999.25	-9999.25	N/A	IC-N/A	1318.1554	-693.8554
42252	-9999.25	-9999.25	N/A	IC-N/A	468.23073	123.06927
42524	-9999.25	-9999.25	N/A	IC-N/A	486.69203	74.50797

43185	322.00	379.40	P on log	LP-ADR	322	379.4
43186	-9999.25	-9999.25	N/A	IC-N/A	263	367.8
43551	-9999.25	-9999.25	N/A	IC-N/A	2332.1615	-1607.3615
43567	-9999.25	-9999.25	N/A	IC-N/A	2226.4023	-1575.6023
43875	1153.00	-548.40	P on log	LP-ADR	1153	-548.4
43976	-9999.25	-9999.25	N/A	IC-N/A	502.17027	113.52973
43985	-9999.25	-9999.25	N/A	IC-N/A	992.96419	-343.06419
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
44002	787.00	-169.10	P on log	LP-ADR	787	-169.1
44194	1710.00	-1197.40	P on log	LP-ADR	1710	-1197.4
44391	1189.80	-457.60	P on log	LP-ADR	1189.8	-457.6
44511	3441.00	-3007.60	P on log	LP-ADR	3441	-3007.6
44554	-9999.25	-9999.25	N/A	IC-N/A	341.46225	415.63775
44735	-9999.25	-9999.25	N/A	IC-N/A	1431.5698	-847.4698
44743	446.00	283.70	P on log	LP-ADR	446	283.7
44795	1048.00	-615.20	P on log	LP-ADR	1048	-615.2
44796	-9999.25	-9999.25	N/A	IC-N/A	916.5157	-429.0157
44820	1339.00	-669.70	P on log	LP-ADR	1339	-669.7
44831	-9999.25	-9999.25	N/A	IC-N/A	628.53327	42.46673
44884	-9999.25	-9999.25	N/A	IC-N/A	1084.797	-654.997
44890	-9999.25	-9999.25	N/A	IC-N/A	1427.6453	-737.0453
44938	-9999.25	-9999.25	N/A	IC-N/A	571.91498	25.68502
44942	-9999.25	-9999.25	N/A	IC-N/A	589.37672	13.42328
44957	-9999.25	-9999.25	N/A	IC-N/A	704.6347	-164.5347
44962	1854.00	-1134.70	P on log	LP-ADR	1854	-1134.7
44964	-9999.25	-9999.25	N/A	IC-N/A	1566.6106	-993.2106
44966	-9999.25	-9999.25	N/A	IC-N/A	582.93542	2.56458
45406	1235.00	-562.00	P on log	LP-ADR	1235	-562
45408	-9999.25	-9999.25	N/A	IC-N/A	1237.6656	-666.6656
45607	-9999.25	-9999.25	N/A	IC-N/A	1875.5888	-1171.6888
45907	-9999.25	-9999.25	N/A	IC-N/A	1215.6133	-636.4133
46168	-9999.25	-9999.25	N/A	IC-N/A	2319.2205	-1611.9205
46193	-9999.25	-9999.25	N/A	IC-N/A	2096.761	-1584.661
46768	-9999.25	-9999.25	N/A	IC-N/A	2317.273	-1613.273
46770	1298.00	-663.50	P on log	LP-ADR	1298	-663.5
46810	-9999.25	-9999.25	N/A	IC-N/A	1006.3522	-409.8522
47882	243.00	557.10	P	DP-FMRP	243	557.1
47936	-9999.25	-9999.25	N/A	IC-N/A	2348.317	-1624.917
48080	-9999.25	-9999.25	N/A	IC-N/A	3910.7596	-3439.2596
48511	1305.00	-514.60	P on log	LP-ADR	1305	-514.6
48678	-9999.25	-9999.25	N/A	IC-N/A	523.30194	87.69806
48712	-9999.25	-9999.25	N/A	IC-N/A	1114.3197	-566.3197

48915	-9999.25	-9999.25	N/A	IC-N/A	1366.9355	-923.3355
49185	-9999.25	-9999.25	N/A	IC-N/A	1026.6148	-517.7148
49529	-9999.25	-9999.25	N/A	IC-N/A	952.0859	-362.4859
50331	-9999.25	-9999.25	N/A	IC-N/A	1386.1712	-736.6712
50333	1370.10	-742.60	P on log	LP-ADR	1370.1	-742.6
50439	917.00	-128.70	P on log	LP-ADR	917	-128.7
50832	595.00	178.10	P on log	LP-ADR	595	178.1
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
50878	162.00	568.90	P on log	LP-ADR	162	568.9
51143	222.00	442.60	P on log	LP-ADR	222	442.6
51478	-9999.25	-9999.25	N/A	IC-N/A	2107.6685	-1592.8685
51636	-9999.25	-9999.25	N/A	IC-N/A	1254.2059	-607.5059
53626	885.00	-273.20	P on log	LP-ADR	885	-273.2
53903	-9999.25	-9999.25	N/A	IC-N/A	1249.5871	-571.0871
54301	-9999.25	-9999.25	N/A	IC-N/A	3037.4791	-2629.3791
54921	-9999.25	-9999.25	N/A	IC-N/A	1425.8347	-736.8347
55626	-9999.25	-9999.25	N/A	IC-N/A	1037.17	-544.27
57212	2027.00	-1350.90	P on log	LP-ADR	2027	-1350.9
57253	1394.00	-654.30	P on log	LP-ADR	1394	-654.3
57369	1692.50	-948.30	P on log	LP-ADR	1692.5	-948.3
57470	-9999.25	-9999.25	N/A	IC-N/A	1464.5274	-797.2274
57726	1206.00	-514.40	P on log	LP-ADR	1206	-514.4
57764	478.20	179.40	P on log	LP-ADR	478.2	179.4
58703	209.00	572.70	P on log	LP-ADR	209	572.7
59328	1798.00	-1167.30	P on log	LP-ADR	1798	-1167.3
60392	-9999.25	-9999.25	N/A	IC-N/A	1864.8472	-1182.5472
60463	-9999.25	-9999.25	N/A	IC-N/A	377.92601	284.87399
60620	-9999.25	-9999.25	N/A	IC-N/A	2466.4216	-1929.3216
60647	-9999.25	-9999.25	N/A	IC-N/A	1355.3445	-583.4445
60784	-9999.25	-9999.25	N/A	IC-N/A	3016.863	-2599.763
61104	-9999.25	-9999.25	N/A	IC-N/A	674.5316	-94.0316
61708	153.90	565.40	P on log	LP-ADR	153.9	565.4
61894	2738.60	-2182.30	P on log	LP-ADR	2738.6	-2182.3
61911	232.00	447.80	P on log	LP-ADR	232	447.8
64431	477.10	220.80	P on log	LP-ADR	477.1	220.8
64550	-9999.25	-9999.25	N/A	IC-N/A	1836.257	-1406.957
64561	962.00	-308.00	P on log	LP-ADR	962	-308
64699	1510.30	-917.50	P on log	LP-ADR	1510.3	-917.5
65374	-9999.25	-9999.25	N/A	IC-N/A	1963.9814	-1409.4814
66140	816.00	-158.30	P on log	LP-ADR	816	-158.3
66243	-9999.25	-9999.25	N/A	IC-N/A	454.88619	145.31381
66398	-9999.25	-9999.25	N/A	IC-N/A	1085.5096	-627.2096

66515	-9999.25	-9999.25	N/A	IC-N/A	1600.5184	-978.0184
67124	-9999.25	-9999.25	N/A	IC-N/A	317.4655	322.3345
67275	-9999.25	-9999.25	N/A	IC-N/A	1154.4147	-698.7147
68018	-9999.25	-9999.25	N/A	IC-N/A	1428.5913	-860.5913
69043	1224.00	-704.20	P on log	LP-ADR	1224	-704.2
69391	-9999.25	-9999.25	N/A	IC-N/A	1111.8787	-494.8787
70030	1162.00	-638.70	P on log	LP-ADR	1162	-638.7
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
70521	-9999.25	-9999.25	N/A	IC-N/A	992.4188	-391.9188
70700	1299.00	-857.30	P on log	LP-ADR	1299	-857.3
71650	-9999.25	-9999.25	N/A	IC-N/A	1479.4386	-950.8386
72123	-9999.25	-9999.25	N/A	IC-N/A	1528.4719	-984.9719
74160	-9999.25	-9999.25	N/A	IC-N/A	958.2368	-369.4368
75341	250.00	281.20	P on log	LP-ADR	250	281.2
75437	-9999.25	-9999.25	N/A	IC-N/A	1429.3586	-880.0586
76317	-9999.25	-9999.25	N/A	IC-N/A	827.5315	-296.4315
76798	-9999.25	-9999.25	N/A	IC-N/A	820.1747	-281.4747
77043	-9999.25	-9999.25	N/A	IC-N/A	1158.1243	-564.4243
77871	-9999.25	-9999.25	N/A	IC-N/A	747.6276	-247.5276
77995	-9999.25	-9999.25	N/A	IC-N/A	1258.0563	-792.3563
78566	617.00	-56.50	P on log	LP-ADR	617	-56.5
78573	-9999.25	-9999.25	N/A	IC-N/A	1565.0089	-986.9089
79583	-9999.25	-9999.25	N/A	IC-N/A	1216.0827	-716.8827
80622	-9999.25	-9999.25	N/A	IC-N/A	1348.9944	-617.8944
80871	812.00	-238.50	P on log	LP-ADR	812	-238.5
81073	-9999.25	-9999.25	N/A	IC-N/A	810.2092	-237.2092
81187	-9999.25	-9999.25	N/A	IC-N/A	630.12742	-89.42742
81188	-9999.25	-9999.25	N/A	IC-N/A	647.71988	-96.71988
81454	-9999.25	-9999.25	N/A	IC-N/A	1038.1998	-430.1998
81821	-9999.25	-9999.25	N/A	IC-N/A	812.7776	-250.8776
82547	240.00	413.90	P on log	LP-ADR	240	413.9
82646	-9999.25	-9999.25	N/A	IC-N/A	376.54348	334.15652
82869	-9999.25	-9999.25	N/A	IC-N/A	1537.3772	-891.1772
82961	-9999.25	-9999.25	N/A	IC-N/A	178.85313	522.94687
83200	-9999.25	-9999.25	N/A	IC-N/A	1353.5841	-743.1841
83643	-9999.25	-9999.25	N/A	IC-N/A	1333.5709	-732.2709
84897	-9999.25	-9999.25	N/A	IC-N/A	1552.5266	-966.0266
85857	1244.00	-506.90	P on log	LP-ADR	1244	-506.9
85898	-9999.25	-9999.25	N/A	IC-N/A	1590.5929	-892.0929
86110	255.00	600.30	P	DP-FMRP	255	600.3
86659	-9999.25	-9999.25	N/A	IC-N/A	939.6654	-401.6654
87133	895.00	-345.90	P	DP-FMRP	895	-345.9

87342	764.00	-62.70	P on log	LP-ADR	764	-62.7
87691	-9999.25	-9999.25	N/A	IC-N/A	1441.5061	-812.2061
88126	2561.00	-2048.60	P on log	LP-ADR	2561	-2048.6
88310	476.00	131.10	P on log	LP-ADR	476	131.1
88519	499.20	221.20	P on log	LP-ADR	499.2	221.2
88720	1741.90	-1224.20	P on log	LP-ADR	1741.9	-1224.2
88824	-9999.25	-9999.25	N/A	IC-N/A	1994.0448	-1501.5448
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
89627	-9999.25	-9999.25	N/A	IC-N/A	1251.5464	-727.3464
89864	-9999.25	-9999.25	N/A	IC-N/A	2236.6591	-1817.5591
89887	-9999.25	-9999.25	N/A	IC-N/A	3397.0166	-2996.6166
89889	-9999.25	-9999.25	N/A	IC-N/A	3388.0942	-2988.4942
90181	-9999.25	-9999.25	N/A	IC-N/A	1303.366	-728.566
91075	-9999.25	-9999.25	N/A	IC-N/A	2554.1089	-2118.3089
92068	500.00	220.40	P on log	LP-ADR	500	220.4
92622	-9999.25	-9999.25	N/A	IC-N/A	470.56964	84.93036
93190	-9999.25	-9999.25	N/A	IC-N/A	386.5566	294.04340
93217	948.00	-201.50	P on log	LP-ADR	948	-201.5
100378	1430.00	-798.90	P on log	LP-ADR	1430	-798.9
101078	-9999.25	-9999.25	N/A	IC-N/A	519.48014	48.11986
101580	-9999.25	-9999.25	N/A	IC-N/A	885.95934	-371.05934
101593	-9999.25	-9999.25	N/A	IC-N/A	1989.4334	-1541.4334
101596	-9999.25	-9999.25	N/A	IC-N/A	1307.9099	-715.8099
101599	-9999.25	-9999.25	N/A	IC-N/A	2249.9568	-1511.4568
101654	-9999.25	-9999.25	N/A	IC-N/A	369.42647	189.47353
101660	-9999.25	-9999.25	N/A	IC-N/A	967.24298	-308.44298
101732	750.60	-178.80	P on log	LP-ADR	750.6	-178.8
101733	-9999.25	-9999.25	N/A	IC-N/A	1208.199	-685.499
102191	-9999.25	-9999.25	N/A	IC-N/A	622.12012	-79.72012
102215	-9999.25	-9999.25	N/A	IC-N/A	527.75719	35.24281
102491	-9999.25	-9999.25	N/A	IC-N/A	1692.4993	-1119.8993
102827	2904.00	-2447.90	P on log	LP-ADR	2904	-2447.9
103416	619.00	0.60	P on log	LP-ADR	619	0.6
103481	-9999.25	-9999.25	N/A	IC-N/A	1331.6797	-461.97968
103599	-9999.25	-9999.25	N/A	IC-N/A	1706.3008	-1267.3008
104457	760.00	-195.90	P on log	LP-ADR	760	-195.9
104458	662.00	-69.50	P on log	LP-ADR	662	-69.5
104459	-9999.25	-9999.25	N/A	IC-N/A	1113.1638	-318.66383
104629	2906.00	-2449.90	P on log	LP-ADR	2906	-2449.9
105693	980.00	-381.70	P on log	LP-ADR	980	-381.7
105694	484.00	167.80	P on log	LP-ADR	484	167.8
106588	202.00	525.20	P on log	LP-ADR	202	525.2

107711	1278.00	-673.20	P on log	LP-ADR	1278	-673.2
107951	-9999.25	-9999.25	N/A	IC-N/A	1904.6426	-1318.1426
108682	-9999.25	-9999.25	N/A	IC-N/A	1397.4955	-744.7955
108819	1403.00	-716.40	P on log	LP-ADR	1403	-716.4
109059	1338.00	-725.40	P on log	LP-ADR	1338	-725.4
109085	1238.00	-599.10	P on log	LP-ADR	1238	-599.1
109279	1911.00	-1377.80	P on log	LP-ADR	1911	-1377.8
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
109338	-9999.25	-9999.25	N/A	IC-N/A	1280.7084	-701.1084
109440	-9999.25	-9999.25	N/A	IC-N/A	1355.1967	-729.1967
109472	1343.60	-729.20	P on log	LP-ADR	1343.6	-729.2
109556	1626.00	-1058.50	P on log	LP-ADR	1626	-1058.5
109750	1357.00	-781.70	P on log	LP-ADR	1357	-781.7
109818	4227.00	-3757.70	P on log	LP-ADR	4227	-3757.7
110720	1298.00	-434.20	P on log	LP-ADR	1298	-434.2
110810	1296.00	-692.90	P on log	LP-ADR	1296	-692.9
110873	1406.00	-708.30	P on log	LP-ADR	1406	-708.3
111111	2114.00	-1474.30	P on log	LP-ADR	2114	-1474.3
111317	1358.40	-743.60	P on log	LP-ADR	1358.4	-743.6
111535	1637.00	-1024.40	P on log	LP-ADR	1637	-1024.4
111582	1288.00	-663.50	P on log	LP-ADR	1288	-663.5
111583	1312.00	-723.30	P on log	LP-ADR	1312	-723.3
111698	-9999.25	-9999.25	N/A	IC-N/A	1361.1361	-651.7361
111711	-9999.25	-9999.25	N/A	IC-N/A	1606.0743	-931.3743
111826	1300.00	-599.90	P on log	LP-ADR	1300	-599.9
111833	1324.20	-790.80	P on log	LP-ADR	1324.2	-790.8
111866	1970.00	-1546.30	P on log	LP-ADR	1970	-1546.3
112219	1572.00	-1046.90	P on log	LP-ADR	1572	-1046.9
112229	-9999.25	-9999.25	N/A	IC-N/A	2393.7707	-1772.2707
112277	-9999.25	-9999.25	N/A	IC-N/A	1352.9139	-709.0139
112288	-9999.25	-9999.25	N/A	IC-N/A	2018.3548	-1384.6548
112435	1194.00	-533.80	P on log	LP-ADR	1194	-533.8
112764	1243.00	-523.20	P on log	LP-ADR	1243	-523.2
113002	1300.00	-548.70	P on log	LP-ADR	1300	-548.7
113076	2048.00	-1352.30	P on log	LP-ADR	2048	-1352.3
113543	1267.00	-379.80	P on log	LP-ADR	1267	-379.8
113949	1535.90	-725.30	P on log	LP-ADR	1535.9	-725.3
114144	-9999.25	-9999.25	N/A	IC-N/A	1531.2755	-849.5755
114292	-9999.25	-9999.25	N/A	IC-N/A	2341.0835	-1668.7835
114341	-9999.25	-9999.25	N/A	IC-N/A	1320.9568	-618.15675
114661	3248.00	-2817.50	P on log	LP-ADR	3248	-2817.5
115223	-9999.25	-9999.25	N/A	IC-N/A	1438.0258	-675.1258

115312	1908.20	-1112.20	P on log	LP-ADR	1908.2	-1112.2
115429	-9999.25	-9999.25	N/A	IC-N/A	1981.5559	-1440.5559
120335	252.00	414.90	P on log	LP-ADR	252	414.9
120748	-9999.25	-9999.25	N/A	IC-N/A	1261.2331	-643.8331
121349	1032.10	-366.70	P on log	LP-ADR	1032.1	-366.7
121595	1636.00	-966.30	P on log	LP-ADR	1636	-966.3
122123	1120.00	-452.40	P on log	LP-ADR	1120	-452.4
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
123053	-9999.25	-9999.25	N/A	IC-N/A	786.83717	-256.83717
123336	-9999.25	-9999.25	N/A	IC-N/A	966.05948	-279.05948
123654	-9999.25	-9999.25	N/A	IC-N/A	2320.8425	-1619.0425
123757	-9999.25	-9999.25	N/A	IC-N/A	2084.335	-1566.535
124339	-9999.25	-9999.25	N/A	IC-N/A	2403.8528	-1660.8528
124491	-9999.25	-9999.25	N/A	IC-N/A	2310.279	-1601.579
124493	-9999.25	-9999.25	N/A	IC-N/A	2237.3562	-1620.1562
124522	-9999.25	-9999.25	N/A	IC-N/A	2216.4518	-1489.9518
124524	-9999.25	-9999.25	N/A	IC-N/A	2095.7027	-1603.4027
124638	-9999.25	-9999.25	N/A	IC-N/A	2348.1596	-1638.9596
125043	1273.00	-574.40	P on log	LP-ADR	1273	-574.4
125506	-9999.25	-9999.25	N/A	IC-N/A	1141.9489	-289.44893
125635	-9999.25	-9999.25	N/A	IC-N/A	703.77266	-71.27266
125769	1180.00	-415.70	P on log	LP-ADR	1180	-415.7
126005	1209.00	-551.20	P on log	LP-ADR	1209	-551.2
126648	-9999.25	-9999.25	N/A	IC-N/A	874.21655	-287.51655
126649	-9999.25	-9999.25	N/A	IC-N/A	1240.933	-536.033
126650	-9999.25	-9999.25	N/A	IC-N/A	1258.318	-595.718
126810	-9999.25	-9999.25	N/A	IC-N/A	1081.331	-266.03098
127044	1179.00	-407.80	P on log	LP-ADR	1179	-407.8
127048	1102.00	-311.50	P on log	LP-ADR	1102	-311.5
127228	-9999.25	-9999.25	N/A	IC-N/A	2563.5894	-1940.9894
127229	-9999.25	-9999.25	N/A	IC-N/A	2755.8961	-2308.5961
127242	952.00	-305.10	P on log	LP-ADR	952	-305.1
127243	-9999.25	-9999.25	N/A	IC-N/A	1186.2791	-425.1791
127304	-9999.25	-9999.25	N/A	IC-N/A	3120.976	-2499.976
128673	-9999.25	-9999.25	N/A	IC-N/A	3149.1823	-2763.8823
128777	-9999.25	-9999.25	N/A	IC-N/A	2047.686	-1501.586
129065	-9999.25	-9999.25	N/A	IC-N/A	2390.7421	-1744.5421
129425	-9999.25	-9999.25	N/A	IC-N/A	2946.3131	-2514.6131
129907	-9999.25	-9999.25	N/A	IC-N/A	2627.8935	-2007.9935
129908	-9999.25	-9999.25	N/A	IC-N/A	2645.1009	-2075.0009
129973	-9999.25	-9999.25	N/A	IC-N/A	2716.6801	-2117.5801
130060	-9999.25	-9999.25	N/A	IC-N/A	2429.7287	-1989.2287

130135	-9999.25	-9999.25	N/A	IC-N/A	1868.665	-1150.565
131875	735.00	-140.80	P on log	LP-ADR	735	-140.8
132142	-9999.25	-9999.25	N/A	IC-N/A	3158.3464	-2606.3464
132143	-9999.25	-9999.25	N/A	IC-N/A	3071.3655	-2568.7655
132325	-9999.25	-9999.25	N/A	IC-N/A	842.3025	-225.2025
132326	-9999.25	-9999.25	N/A	IC-N/A	830.10995	-216.20995
132327	817.00	-248.20	P on log	LP-ADR	817	-248.2
KGS REC	T6_SCN_t	T6_SS	T6_pres	T6_src	T6_ana_MD	T6_ana_SS
132433	3176.00	-2756.40	P on log	LP-ADR	3176	-2756.4
133831	-9999.25	-9999.25	N/A	IC-N/A	423.72659	26.37341
134591	-9999.25	-9999.25	N/A	IC-N/A	1161.1243	-565.9243
134670	2047.80	-1585.10	P on log	LP-ADR	2047.8	-1585.1
135644	1192.00	-434.70	P on log	LP-ADR	1192	-434.7
135647	1361.00	-656.70	P on log	LP-ADR	1361	-656.7
136312	-9999.25	-9999.25	N/A	IC-N/A	1299.7718	-768.0718
136624	-9999.25	-9999.25	N/A	IC-N/A	832.083	-252.683
136630	-9999.25	-9999.25	N/A	IC-N/A	3848.8919	-3388.8919
136631	-9999.25	-9999.25	N/A	IC-N/A	3815.6733	-3381.5733
137175	-9999.25	-9999.25	N/A	IC-N/A	1860.749	-1368.649
137356	1305.00	-701.40	P on log	LP-ADR	1305	-701.4
137575	925.80	-312.90	P on log	LP-ADR	925.8	-312.9
137576	855.10	-219.60	P on log	LP-ADR	855.1	-219.6
138273	-9999.25	-9999.25	N/A	IC-N/A	1569.7551	-984.8551
138396	-9999.25	-9999.25	N/A	IC-N/A	1529.0515	-952.5515
138644	-9999.25	-9999.25	N/A	IC-N/A	2521.4351	-1969.3351
139171	-9999.25	-9999.25	N/A	IC-N/A	2541.1629	-2045.8629
141283	-9999.25	-9999.25	N/A	IC-N/A	1521.4807	-1059.1807
141285	-9999.25	-9999.25	N/A	IC-N/A	1393.5876	-810.7876
143084	-9999.25	-9999.25	N/A	IC-N/A	3266.1624	-2779.2624
2000111	-9999.25	-9999.25	N/A	IC-N/A	225.23676	539.66324
2029993	-9999.25	-9999.25	N/A	IC-N/A	2735.536	-2124.836
2030235	251.00	502.90	P on log	LP-ADR	251	502.9
2037542	-9999.25	-9999.25	N/A	IC-N/A	868.517	-225.917
2037613	-9999.25	-9999.25	N/A	IC-N/A	596.40686	133.79314
2037770	-9999.25	-9999.25	N/A	IC-N/A	1030.0917	-346.9917
2039921	315.40	193.10	P on log	LP-ADR	315.4	193.1
2040109	-9999.25	-9999.25	N/A	IC-N/A	1194.8791	-556.6791
2040429	455.00	247.80	P on log	LP-ADR	455	247.8
2040433	-9999.25	-9999.25	N/A	IC-N/A	1618.4465	-1015.8465
2040888	-9999.25	-9999.25	N/A	IC-N/A	2056.3206	-1636.3206
2042187	-9999.25	-9999.25	N/A	IC-N/A	547.43872	81.76128

KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
1360	452.00	116.60	P on log	LP-ADR	452	116.6
1561	329.00	280.70	P on log	LP-ADR	329	280.7
1612	-9999.25	-9999.25	N/A	IC-N/A	548.899	19.801
KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
1647	584.00	48.00	P on log	LP-ADR	584	48
1677	525.00	155.50	P on log	LP-ADR	525	155.5
2089	434.00	261.90	P on log	LP-ADR	434	261.9
2182	680.00	23.80	P on log	LP-ADR	680	23.8
2183	783.00	-115.40	P on log	LP-ADR	783	-115.4
2619	2072.00	-1576.80	P on log	LP-ADR	2072	-1576.8
2626	2356.00	-1907.90	P on log	LP-ADR	2356	-1907.9
2627	3824.00	-3415.00	P on log	LP-ADR	3824	-3415
2628	-9999.25	-9999.25	N/A	IC-N/A	3695.826	-3274.126
2631	2843.00	-2157.90	P on log	LP-ADR	2843	-2157.9
8245	-9999.25	-9999.25	N/A	IC-N/A	818.83363	-182.33363
8247	-9999.25	-9999.25	N/A	IC-N/A	885.81014	-233.91014
8249	1531.00	-951.60	P on log	LP-ADR	1531	-951.6
8254	-9999.25	-9999.25	N/A	IC-N/A	1842.7153	-1224.7153
8255	-9999.25	-9999.25	N/A	IC-N/A	1722.6803	-1214.6803
8268	-9999.25	-9999.25	N/A	IC-N/A	2040.9253	-1278.2253
8288	-9999.25	-9999.25	N/A	IC-N/A	2235.1775	-1723.1775
8840	-9999.25	-9999.25	N/A	IC-N/A	2186.5125	-1602.6125
8852	-9999.25	-9999.25	N/A	IC-N/A	2266.8829	-1683.1829
8853	-9999.25	-9999.25	N/A	IC-N/A	2309.7974	-1747.3974
8856	-9999.25	-9999.25	N/A	IC-N/A	2630.3049	-1892.4049
8870	-9999.25	-9999.25	N/A	IC-N/A	2630.4778	-1888.9778
8884	-9999.25	-9999.25	N/A	IC-N/A	2616.5469	-1874.7469
8922	-9999.25	-9999.25	N/A	IC-N/A	2068.9328	-1529.2328
8929	-9999.25	-9999.25	N/A	IC-N/A	2246.2351	-1542.8351
8931	-9999.25	-9999.25	N/A	IC-N/A	2250.4007	-1544.3007
8942	-9999.25	-9999.25	N/A	IC-N/A	2290.8618	-1618.9618
8949	-9999.25	-9999.25	N/A	IC-N/A	2347.8498	-1654.0498
8950	-9999.25	-9999.25	N/A	IC-N/A	2340.9404	-1641.6404
8966	2292.00	-1564.10	P on log	LP-ADR	2292	-1564.1
8970	-9999.25	-9999.25	N/A	IC-N/A	1848.181	-1242.081
8974	2424.00	-1733.60	P on log	LP-ADR	2424	-1733.6
8979	2319.00	-1745.40	P on log	LP-ADR	2319	-1745.4
8985	1502.00	-848.10	P on log	LP-ADR	1502	-848.1
9892	1142.00	-524.10	P on log	LP-ADR	1142	-524.1
9948	-9999.25	-9999.25	N/A	IC-N/A	1045.079	-532.579

10018	1238.00	-686.00	P on log	LP-ADR	1238	-686
10037	918.00	-265.30	P on log	LP-ADR	918	-265.3
12499	1056.00	-524.50	P on log	LP-ADR	1056	-524.5
12520	1600.00	-977.30	P on log	LP-ADR	1600	-977.3
12534	-9999.25	-9999.25	N/A	IC-N/A	1455.3143	-750.8143
12535	-9999.25	-9999.25	N/A	IC-N/A	1378.4587	-712.7587
KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
12557	-9999.25	-9999.25	N/A	IC-N/A	1355.5348	-695.6348
12581	-9999.25	-9999.25	N/A	IC-N/A	1634.881	-998.981
12585	-9999.25	-9999.25	N/A	IC-N/A	1548.263	-968.263
12588	-9999.25	-9999.25	N/A	IC-N/A	1773.9556	-1059.1556
12589	-9999.25	-9999.25	N/A	IC-N/A	1733.7608	-1007.9608
12611	-9999.25	-9999.25	N/A	IC-N/A	2577.399	-1825.099
12623	-9999.25	-9999.25	N/A	IC-N/A	2285.8455	-1799.1455
12632	2306.00	-1815.70	P on log	LP-ADR	2306	-1815.7
12659	-9999.25	-9999.25	N/A	IC-N/A	1900.9504	-1211.1504
16942	-9999.25	-9999.25	N/A	IC-N/A	1302.1313	-613.6313
16946	811.00	-151.70	P	DP-FMRP	811	-151.7
16951	-9999.25	-9999.25	N/A	IC-N/A	712.956	-88.756
17423	282.00	198.50	P on log	LP-ADR	282	198.5
17428	1473.00	-940.30	P on log	LP-ADR	1473	-940.3
17448	-9999.25	-9999.25	N/A	IC-N/A	1230.102	-653.802
17470	836.00	-357.60	P on log	LP-ADR	836	-357.6
17473	846.00	-302.00	P on log	LP-ADR	846	-302
17494	-9999.25	-9999.25	N/A	IC-N/A	1793.573	-1156.273
17496	-9999.25	-9999.25	N/A	IC-N/A	1863.5817	-1230.1817
17550	-9999.25	-9999.25	N/A	IC-N/A	1187.153	-728.653
17582	-9999.25	-9999.25	N/A	IC-N/A	876.9707	-227.8707
17588	-9999.25	-9999.25	N/A	IC-N/A	2381.7899	-1972.0899
17592	-9999.25	-9999.25	N/A	IC-N/A	1953.8494	-1360.9494
17660	-9999.25	-9999.25	N/A	IC-N/A	1613.12	-996.02
17687	1514.00	-906.60	P on log	LP-ADR	1514	-906.6
18752	-9999.25	-9999.25	N/A	IC-N/A	4074.8095	-3580.4095
21277	-9999.25	-9999.25	N/A	IC-N/A	471.714	324.686
21322	-9999.25	-9999.25	N/A	IC-N/A	543.965	225.835
22861	1340.00	-777.30	P on log	LP-ADR	1340	-777.3
23475	-9999.25	-9999.25	N/A	IC-N/A	1687.427	-1068.527
23477	1359.00	-671.90	P on log	LP-ADR	1359	-671.9
24414	-9999.25	-9999.25	N/A	IC-N/A	695.5285	-123.5285
24513	-9999.25	-9999.25	N/A	IC-N/A	1150.674	-527.074
24518	702.00	-136.20	P on log	LP-ADR	702	-136.2
24520	-9999.25	-9999.25	N/A	IC-N/A	611.76315	-5.46315

24533	-9999.25	-9999.25	N/A	IC-N/A	1722.899	-1091.299
24862	-9999.25	-9999.25	N/A	IC-N/A	1529.482	-851.482
24878	596.00	-10.70	P on log	LP-ADR	596	-10.7
24985	-9999.25	-9999.25	N/A	IC-N/A	1561.4989	-918.8989
24987	-9999.25	-9999.25	N/A	IC-N/A	1536.1824	-889.0824
25006	-9999.25	-9999.25	N/A	IC-N/A	1662.1844	-1003.7844
KGS REC	T7_WDRN _t	T7_SS	T7_pres	T7_src	T7_ana_ MD	T7_ana_SS
25007	-9999.25	-9999.25	N/A	IC-N/A	626.17587	37.82413
25065	-9999.25	-9999.25	N/A	IC-N/A	470.10229	160.09771
25165	-9999.25	-9999.25	N/A	IC-N/A	3183.261	-2574.561
26194	822.00	-132.70	P on log	LP-ADR	822	-132.7
26231	-9999.25	-9999.25	N/A	IC-N/A	2354.0667	-1869.5667
26540	-9999.25	-9999.25	N/A	IC-N/A	2464.9593	-2023.5593
26541	-9999.25	-9999.25	N/A	IC-N/A	2380.3542	-1969.1542
26542	-9999.25	-9999.25	N/A	IC-N/A	2415.6635	-1808.5635
26543	-9999.25	-9999.25	N/A	IC-N/A	2760.4636	-2103.1636
26544	-9999.25	-9999.25	N/A	IC-N/A	2818.4792	-2155.0792
26549	-9999.25	-9999.25	N/A	IC-N/A	943.72848	-301.72848
26609	-9999.25	-9999.25	N/A	IC-N/A	1273.0795	-710.9795
26970	-9999.25	-9999.25	N/A	IC-N/A	1606.806	-1085.206
27009	-9999.25	-9999.25	N/A	IC-N/A	2406.8332	-1868.0332
27145	-9999.25	-9999.25	N/A	IC-N/A	1503.4278	-885.7278
27146	-9999.25	-9999.25	N/A	IC-N/A	1684.6763	-1084.1763
27367	-9999.25	-9999.25	N/A	IC-N/A	1772.766	-1189.366
27852	-9999.25	-9999.25	N/A	IC-N/A	1057.9983	-447.4983
28285	-9999.25	-9999.25	N/A	IC-N/A	1713.8326	-1050.8326
28442	-9999.25	-9999.25	N/A	IC-N/A	2253.2519	-1569.2519
28447	-9999.25	-9999.25	N/A	IC-N/A	2288.8819	-1589.7819
28458	-9999.25	-9999.25	N/A	IC-N/A	2059.6161	-1526.3161
28470	-9999.25	-9999.25	N/A	IC-N/A	2105.9874	-1371.9874
29044	-9999.25	-9999.25	N/A	IC-N/A	1507.478	-1009.178
29071	-9999.25	-9999.25	N/A	IC-N/A	1669.534	-991.734
29102	-9999.25	-9999.25	N/A	IC-N/A	1731.8787	-1141.0787
30067	888.00	-224.10	P on log	LP-ADR	888	-224.1
30090	-9999.25	-9999.25	N/A	IC-N/A	2339.3134	-1860.9134
30092	-9999.25	-9999.25	N/A	IC-N/A	1424.3176	-826.8176
30117	-9999.25	-9999.25	N/A	IC-N/A	1065.825	-581.325
30118	-9999.25	-9999.25	N/A	IC-N/A	1357.1351	-756.5351
30483	-9999.25	-9999.25	N/A	IC-N/A	729.9524	-95.4524
30670	-9999.25	-9999.25	N/A	IC-N/A	1813.1962	-1266.7962
30794	-9999.25	-9999.25	N/A	IC-N/A	2630.466	-1866.366
30795	-9999.25	-9999.25	N/A	IC-N/A	2396.5517	-1861.7517

30824	239.00	582.10	P on log	LP-ADR	239	582.1
31005	449.00	261.10	P on log	LP-ADR	449	261.1
31018	-9999.25	-9999.25	N/A	IC-N/A	2353.2662	-1851.0662
31120	-9999.25	-9999.25	N/A	IC-N/A	462.01135	294.88865
31264	-9999.25	-9999.25	N/A	IC-N/A	1843.991	-1363.691
31394	1050.00	-433.10	P on log	LP-ADR	1050	-433.1
KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
32126	1248.00	-745.40	P on log	LP-ADR	1248	-745.4
32468	-9999.25	-9999.25	N/A	IC-N/A	1334.668	-734.168
32641	506.00	128.20	P on log	LP-ADR	506	128.2
32959	379.00	270.50	P on log	LP-ADR	379	270.5
33057	925.00	-300.70	P on log	LP-ADR	925	-300.7
33896	-9999.25	-9999.25	N/A	IC-N/A	1756.8496	-1088.6496
34176	-9999.25	-9999.25	N/A	IC-N/A	1528.018	-915.918
34251	-9999.25	-9999.25	N/A	IC-N/A	1668.2721	-1150.7721
34413	-9999.25	-9999.25	N/A	IC-N/A	494.13853	37.06147
34743	-9999.25	-9999.25	N/A	IC-N/A	1666.4526	-1113.0526
35139	-9999.25	-9999.25	N/A	IC-N/A	1230.4508	-781.6508
35370	-9999.25	-9999.25	N/A	IC-N/A	1552.0838	-794.6838
36020	-9999.25	-9999.25	N/A	IC-N/A	1592.9081	-960.5081
36251	-9999.25	-9999.25	N/A	IC-N/A	2319.3856	-1796.3856
36373	-9999.25	-9999.25	N/A	IC-N/A	2374.5555	-1858.7555
36411	1848.00	-1231.10	P on log	LP-ADR	1848	-1231.1
36701	-9999.25	-9999.25	N/A	IC-N/A	1520.5683	-970.4683
37056	-9999.25	-9999.25	N/A	IC-N/A	861.378	-252.778
37057	788.00	-200.90	P on log	LP-ADR	788	-200.9
37064	718.00	-156.20	P on log	LP-ADR	718	-156.2
37649	-9999.25	-9999.25	N/A	IC-N/A	1225.233	-787.233
37651	-9999.25	-9999.25	N/A	IC-N/A	1455.4615	-918.8615
37710	-9999.25	-9999.25	N/A	IC-N/A	1264.36	-789.76
37719	-9999.25	-9999.25	N/A	IC-N/A	1355.083	-789.283
37826	-9999.25	-9999.25	N/A	IC-N/A	1655.5662	-1235.5662
38267	-9999.25	-9999.25	N/A	IC-N/A	1238.812	-658.612
38274	1239.00	-685.20	P on log	LP-ADR	1239	-685.2
38322	-9999.25	-9999.25	N/A	IC-N/A	2515.5085	-1786.4085
38426	244.00	445.10	P on log	LP-ADR	244	445.1
38932	-9999.25	-9999.25	N/A	IC-N/A	1793.6813	-1246.2813
41548	-9999.25	-9999.25	N/A	IC-N/A	2359.9359	-1812.0359
41592	-9999.25	-9999.25	N/A	IC-N/A	2332.0102	-1826.5102
41615	-9999.25	-9999.25	N/A	IC-N/A	1543.8655	-898.6655
41696	-9999.25	-9999.25	N/A	IC-N/A	743.7809	-159.0809
41697	-9999.25	-9999.25	N/A	IC-N/A	710.19389	-138.89389

41725	-9999.25	-9999.25	N/A	IC-N/A	962.897	-323.797
41810	947.00	-356.60	P on log	LP-ADR	947	-356.6
41947	-9999.25	-9999.25	N/A	IC-N/A	643.94814	-55.14814
42211	-9999.25	-9999.25	N/A	IC-N/A	1565.0174	-940.7174
42252	-9999.25	-9999.25	N/A	IC-N/A	655.79673	-64.49673
42524	-9999.25	-9999.25	N/A	IC-N/A	679.26803	-118.06803
KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
43185	-9999.25	-9999.25	N/A	IC-N/A	455.258	246.142
43186	-9999.25	-9999.25	N/A	IC-N/A	397.115	233.685
43551	-9999.25	-9999.25	N/A	IC-N/A	2635.3105	-1910.5105
43567	-9999.25	-9999.25	N/A	IC-N/A	2527.8963	-1877.0963
43875	-9999.25	-9999.25	N/A	IC-N/A	1368.145	-763.545
43976	-9999.25	-9999.25	N/A	IC-N/A	708.41627	-92.71627
43985	-9999.25	-9999.25	N/A	IC-N/A	1179.1232	-529.22319
44002	884.00	-266.10	P on log	LP-ADR	884	-266.1
44194	2060.00	-1547.40	P on log	LP-ADR	2060	-1547.4
44391	1444.00	-711.80	P on log	LP-ADR	1444	-711.8
44511	-9999.25	-9999.25	N/A	IC-N/A	3776.423	-3343.023
44554	-9999.25	-9999.25	N/A	IC-N/A	484.66925	272.43075
44735	-9999.25	-9999.25	N/A	IC-N/A	1688.7968	-1104.6968
44743	583.00	146.70	P on log	LP-ADR	583	146.7
44795	1287.00	-854.20	P on log	LP-ADR	1287	-854.2
44796	-9999.25	-9999.25	N/A	IC-N/A	1146.3857	-658.8857
44820	-9999.25	-9999.25	N/A	IC-N/A	1592.147	-922.847
44831	-9999.25	-9999.25	N/A	IC-N/A	814.37527	-143.37527
44884	-9999.25	-9999.25	N/A	IC-N/A	1325.532	-895.732
44890	-9999.25	-9999.25	N/A	IC-N/A	1671.1853	-980.5853
44938	-9999.25	-9999.25	N/A	IC-N/A	771.67598	-174.07598
44942	-9999.25	-9999.25	N/A	IC-N/A	787.61972	-184.81972
44957	-9999.25	-9999.25	N/A	IC-N/A	919.1957	-379.0957
44962	-9999.25	-9999.25	N/A	IC-N/A	2133.677	-1414.377
44964	-9999.25	-9999.25	N/A	IC-N/A	1833.2126	-1259.8126
44966	-9999.25	-9999.25	N/A	IC-N/A	775.09542	-189.59542
45406	-9999.25	-9999.25	N/A	IC-N/A	1459.37	-786.37
45408	-9999.25	-9999.25	N/A	IC-N/A	1484.7066	-913.7066
45607	-9999.25	-9999.25	N/A	IC-N/A	2155.6608	-1451.7608
45907	-9999.25	-9999.25	N/A	IC-N/A	1449.2793	-870.0793
46168	-9999.25	-9999.25	N/A	IC-N/A	2621.8445	-1914.5445
46193	-9999.25	-9999.25	N/A	IC-N/A	2399.072	-1886.972
46768	-9999.25	-9999.25	N/A	IC-N/A	2619.733	-1915.733
46770	-9999.25	-9999.25	N/A	IC-N/A	1526.781	-892.281
46810	-9999.25	-9999.25	N/A	IC-N/A	1223.2002	-626.7002

47882	328.00	472.10	P on log	LP-ADR	328	472.1
47936	-9999.25	-9999.25	N/A	IC-N/A	2650.322	-1926.922
48080	-9999.25	-9999.25	N/A	IC-N/A	4224.8916	-3753.3916
48511	-9999.25	-9999.25	N/A	IC-N/A	1530.654	-740.254
48678	-9999.25	-9999.25	N/A	IC-N/A	730.15494	-119.15494
48712	-9999.25	-9999.25	N/A	IC-N/A	1345.7857	-797.7857
KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
48915	-9999.25	-9999.25	N/A	IC-N/A	1631.2365	-1187.6365
49185	-9999.25	-9999.25	N/A	IC-N/A	1256.7378	-747.8378
49529	-9999.25	-9999.25	N/A	IC-N/A	1165.4909	-575.8909
50331	-9999.25	-9999.25	N/A	IC-N/A	1648.5432	-999.0432
50333	1620.00	-992.50	P on log	LP-ADR	1620	-992.5
50439	1108.00	-319.70	P on log	LP-ADR	1108	-319.7
50832	738.00	35.10	P on log	LP-ADR	738	35.1
50878	256.00	474.90	P on log	LP-ADR	256	474.9
51143	272.00	392.60	P on log	LP-ADR	272	392.6
51478	-9999.25	-9999.25	N/A	IC-N/A	2412.1395	-1897.3395
51636	-9999.25	-9999.25	N/A	IC-N/A	1493.3999	-846.6999
53626	-9999.25	-9999.25	N/A	IC-N/A	1091.898	-480.098
53903	-9999.25	-9999.25	N/A	IC-N/A	1486.9231	-808.4231
54301	-9999.25	-9999.25	N/A	IC-N/A	3352.4351	-2944.3351
54921	-9999.25	-9999.25	N/A	IC-N/A	1647.7257	-958.7257
55626	-9999.25	-9999.25	N/A	IC-N/A	1264.097	-771.197
57212	-9999.25	-9999.25	N/A	IC-N/A	2308.578	-1632.478
57253	1629.00	-889.30	P on log	LP-ADR	1629	-889.3
57369	2006.00	-1261.80	P on log	LP-ADR	2006	-1261.8
57470	-9999.25	-9999.25	N/A	IC-N/A	1711.1634	-1043.8634
57726	1460.00	-768.40	P on log	LP-ADR	1460	-768.4
57764	672.00	-14.40	P on log	LP-ADR	672	-14.4
58703	310.00	471.70	P on log	LP-ADR	310	471.7
59328	2036.00	-1405.30	P on log	LP-ADR	2036	-1405.3
60392	-9999.25	-9999.25	N/A	IC-N/A	2147.1972	-1464.8972
60463	-9999.25	-9999.25	N/A	IC-N/A	553.80701	108.99299
60620	-9999.25	-9999.25	N/A	IC-N/A	2766.9436	-2229.8436
60647	-9999.25	-9999.25	N/A	IC-N/A	1584.2735	-812.3735
60784	-9999.25	-9999.25	N/A	IC-N/A	3342.096	-2924.996
61104	-9999.25	-9999.25	N/A	IC-N/A	880.4526	-299.9526
61708	269.00	450.30	P on log	LP-ADR	269	450.3
61894	3018.00	-2461.70	P on log	LP-ADR	3018	-2461.7
61911	306.00	373.80	P on log	LP-ADR	306	373.8
64431	693.00	4.90	P on log	LP-ADR	693	4.9
64550	-9999.25	-9999.25	N/A	IC-N/A	2119.638	-1690.338

64561	1112.00	-458.00	P on log	LP-ADR	1112	-458
64699	-9999.25	-9999.25	N/A	IC-N/A	1775.582	-1182.782
65374	-9999.25	-9999.25	N/A	IC-N/A	2250.0324	-1695.5324
66140	938.00	-280.30	P on log	LP-ADR	938	-280.3
66243	-9999.25	-9999.25	N/A	IC-N/A	651.78219	-51.58219
66398	-9999.25	-9999.25	N/A	IC-N/A	1329.9286	-871.6286
KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
66515	-9999.25	-9999.25	N/A	IC-N/A	1862.1714	-1239.6714
67124	-9999.25	-9999.25	N/A	IC-N/A	453.9795	185.8205
67275	-9999.25	-9999.25	N/A	IC-N/A	1407.2197	-951.5197
68018	-9999.25	-9999.25	N/A	IC-N/A	1690.6633	-1122.6633
69043	-9999.25	-9999.25	N/A	IC-N/A	1467.97	-948.17
69391	-9999.25	-9999.25	N/A	IC-N/A	1350.6807	-733.6807
70030	-9999.25	-9999.25	N/A	IC-N/A	1404.925	-881.625
70521	-9999.25	-9999.25	N/A	IC-N/A	1203.0618	-602.5618
70700	-9999.25	-9999.25	N/A	IC-N/A	1548.773	-1107.073
71650	-9999.25	-9999.25	N/A	IC-N/A	1746.3726	-1217.7726
72123	-9999.25	-9999.25	N/A	IC-N/A	1798.1109	-1254.6109
74160	-9999.25	-9999.25	N/A	IC-N/A	1171.1298	-582.3298
75341	433.00	98.20	P on log	LP-ADR	433	98.2
75437	-9999.25	-9999.25	N/A	IC-N/A	1688.9636	-1139.6636
76317	-9999.25	-9999.25	N/A	IC-N/A	1050.0575	-518.9575
76798	-9999.25	-9999.25	N/A	IC-N/A	1044.0117	-505.3117
77043	-9999.25	-9999.25	N/A	IC-N/A	1393.0103	-799.3103
77871	-9999.25	-9999.25	N/A	IC-N/A	965.3216	-465.2216
77995	-9999.25	-9999.25	N/A	IC-N/A	1513.5173	-1047.8173
78566	851.00	-290.50	P on log	LP-ADR	851	-290.5
78573	-9999.25	-9999.25	N/A	IC-N/A	1839.9019	-1261.8019
79583	-9999.25	-9999.25	N/A	IC-N/A	1470.8967	-971.6967
80622	-9999.25	-9999.25	N/A	IC-N/A	1592.7064	-861.6064
80871	1036.00	-462.50	P on log	LP-ADR	1036	-462.5
81073	-9999.25	-9999.25	N/A	IC-N/A	1033.0522	-460.0522
81187	-9999.25	-9999.25	N/A	IC-N/A	837.91442	-297.21442
81188	-9999.25	-9999.25	N/A	IC-N/A	856.90488	-305.90488
81454	-9999.25	-9999.25	N/A	IC-N/A	1273.9228	-665.9228
81821	-9999.25	-9999.25	N/A	IC-N/A	1039.8786	-477.9786
82547	310.00	343.90	P on log	LP-ADR	310	343.9
82646	-9999.25	-9999.25	N/A	IC-N/A	544.98148	165.71852
82869	-9999.25	-9999.25	N/A	IC-N/A	1791.2902	-1145.0902
82961	-9999.25	-9999.25	N/A	IC-N/A	307.67013	394.12987
83200	-9999.25	-9999.25	N/A	IC-N/A	1606.6121	-996.2121
83643	-9999.25	-9999.25	N/A	IC-N/A	1588.0259	-986.7259

84897	-9999.25	-9999.25	N/A	IC-N/A	1819.8806	-1233.3806
85857	-9999.25	-9999.25	N/A	IC-N/A	1479.35	-742.25
85898	-9999.25	-9999.25	N/A	IC-N/A	1849.1819	-1150.6819
86110	302.00	553.30	P	DP-FMRP	302	553.3
86659	-9999.25	-9999.25	N/A	IC-N/A	1169.4934	-631.4934
87133	-9999.25	-9999.25	N/A	IC-N/A	1122.695	-573.595
KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
87342	-9999.25	-9999.25	N/A	IC-N/A	937.23	-235.93
87691	-9999.25	-9999.25	N/A	IC-N/A	1696.4041	-1067.1041
88126	2896.00	-2383.60	P on log	LP-ADR	2896	-2383.6
88310	-9999.25	-9999.25	N/A	IC-N/A	656.846	-49.746
88519	692.00	28.40	P on log	LP-ADR	692	28.4
88720	-9999.25	-9999.25	N/A	IC-N/A	2031.752	-1514.052
88824	-9999.25	-9999.25	N/A	IC-N/A	2296.2208	-1803.7208
89627	-9999.25	-9999.25	N/A	IC-N/A	1494.3064	-970.1064
89864	-9999.25	-9999.25	N/A	IC-N/A	2540.4951	-2121.3951
89887	-9999.25	-9999.25	N/A	IC-N/A	3730.0136	-3329.6136
89889	-9999.25	-9999.25	N/A	IC-N/A	3719.5022	-3319.9022
90181	-9999.25	-9999.25	N/A	IC-N/A	1545.997	-971.197
91075	-9999.25	-9999.25	N/A	IC-N/A	2876.2129	-2440.4129
92068	692.00	28.40	P on log	LP-ADR	692	28.4
92622	-9999.25	-9999.25	N/A	IC-N/A	667.00464	-111.50464
93190	-9999.25	-9999.25	N/A	IC-N/A	557.3276	123.27240
93217	1150.00	-403.50	P on log	LP-ADR	1150	-403.5
100378	1672.00	-1040.90	P on log	LP-ADR	1672	-1040.9
101078	-9999.25	-9999.25	N/A	IC-N/A	715.25514	-147.65514
101580	-9999.25	-9999.25	N/A	IC-N/A	1060.7153	-545.81534
101593	-9999.25	-9999.25	N/A	IC-N/A	2290.7304	-1842.7304
101596	-9999.25	-9999.25	N/A	IC-N/A	1557.9099	-965.8099
101599	-9999.25	-9999.25	N/A	IC-N/A	2551.7388	-1813.2388
101654	-9999.25	-9999.25	N/A	IC-N/A	549.84047	9.05953
101660	-9999.25	-9999.25	N/A	IC-N/A	1105.343	-446.54298
101732	-9999.25	-9999.25	N/A	IC-N/A	956.046	-384.246
101733	-9999.25	-9999.25	N/A	IC-N/A	1446.324	-923.624
102191	-9999.25	-9999.25	N/A	IC-N/A	827.22412	-284.82412
102215	-9999.25	-9999.25	N/A	IC-N/A	723.74419	-160.74419
102491	-9999.25	-9999.25	N/A	IC-N/A	1971.6743	-1399.0743
102827	3235.00	-2778.90	P on log	LP-ADR	3235	-2778.9
103416	860.00	-240.40	P on log	LP-ADR	860	-240.4
103481	-9999.25	-9999.25	N/A	IC-N/A	1497.2987	-627.59868
103599	-9999.25	-9999.25	N/A	IC-N/A	1984.1138	-1545.1138
104457	1026.00	-461.90	P on log	LP-ADR	1026	-461.9

104458	908.00	-315.50	P on log	LP-ADR	908	-315.5
104459	-9999.25	-9999.25	N/A	IC-N/A	1329.8088	-535.30883
104629	3238.00	-2781.90	P on log	LP-ADR	3238	-2781.9
105693	1204.00	-605.70	P on log	LP-ADR	1204	-605.7
105694	682.00	-30.20	P on log	LP-ADR	682	-30.2
106588	254.00	473.20	P on log	LP-ADR	254	473.2
KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
107711	-9999.25	-9999.25	N/A	IC-N/A	1500.681	-895.881
107951	-9999.25	-9999.25	N/A	IC-N/A	2194.6796	-1608.1796
108682	-9999.25	-9999.25	N/A	IC-N/A	1643.5105	-990.8105
108819	-9999.25	-9999.25	N/A	IC-N/A	1644.91	-958.31
109059	1538.00	-925.40	P on log	LP-ADR	1538	-925.4
109085	-9999.25	-9999.25	N/A	IC-N/A	1471.648	-832.748
109279	-9999.25	-9999.25	N/A	IC-N/A	2203.139	-1669.939
109338	-9999.25	-9999.25	N/A	IC-N/A	1524.5864	-944.9864
109440	-9999.25	-9999.25	N/A	IC-N/A	1602.6387	-976.6387
109472	-9999.25	-9999.25	N/A	IC-N/A	1591.042	-976.642
109556	-9999.25	-9999.25	N/A	IC-N/A	1890.725	-1323.225
109750	1642.00	-1066.70	P on log	LP-ADR	1642	-1066.7
109818	-9999.25	-9999.25	N/A	IC-N/A	4479.466	-4010.166
110720	1506.00	-642.20	P on log	LP-ADR	1506	-642.2
110810	-9999.25	-9999.25	N/A	IC-N/A	1537.715	-934.615
110873	1608.00	-910.30	P on log	LP-ADR	1608	-910.3
111111	-9999.25	-9999.25	N/A	IC-N/A	2414.907	-1775.207
111317	-9999.25	-9999.25	N/A	IC-N/A	1612.276	-997.476
111535	-9999.25	-9999.25	N/A	IC-N/A	1888.036	-1275.436
111582	-9999.25	-9999.25	N/A	IC-N/A	1533.078	-908.578
111583	-9999.25	-9999.25	N/A	IC-N/A	1556.412	-967.712
111698	-9999.25	-9999.25	N/A	IC-N/A	1600.4461	-891.0461
111711	-9999.25	-9999.25	N/A	IC-N/A	1860.6563	-1185.9563
111826	-9999.25	-9999.25	N/A	IC-N/A	1531.372	-831.272
111833	-9999.25	-9999.25	N/A	IC-N/A	1572.037	-1038.637
111866	-9999.25	-9999.25	N/A	IC-N/A	2251.77	-1828.07
112219	1832.00	-1306.90	P on log	LP-ADR	1832	-1306.9
112229	-9999.25	-9999.25	N/A	IC-N/A	2705.8337	-2084.3337
112277	-9999.25	-9999.25	N/A	IC-N/A	1601.0869	-957.1869
112288	-9999.25	-9999.25	N/A	IC-N/A	2293.5558	-1659.8558
112435	1414.00	-753.80	P on log	LP-ADR	1414	-753.8
112764	1444.00	-724.20	P on log	LP-ADR	1444	-724.2
113002	1520.00	-768.70	P on log	LP-ADR	1520	-768.7
113076	-9999.25	-9999.25	N/A	IC-N/A	2340.965	-1645.265
113543	1462.00	-574.80	P on log	LP-ADR	1462	-574.8

113949	-9999.25	-9999.25	N/A	IC-N/A	1776.688	-966.088
114144	-9999.25	-9999.25	N/A	IC-N/A	1762.2565	-1080.5565
114292	-9999.25	-9999.25	N/A	IC-N/A	2642.2395	-1969.9395
114341	-9999.25	-9999.25	N/A	IC-N/A	1521.8036	-819.00375
114661	3635.00	-3204.50	P on log	LP-ADR	3635	-3204.5
115223	-9999.25	-9999.25	N/A	IC-N/A	1673.7138	-910.8138
KGS REC	T7_WDRN_t	T7_SS	T7_pres	T7_src	T7_ana_MD	T7_ana_SS
115312	2216.00	-1420.00	P on log	LP-ADR	2216	-1420
115429	-9999.25	-9999.25	N/A	IC-N/A	2267.2399	-1726.2399
120335	374.00	292.90	P on log	LP-ADR	374	292.9
120748	-9999.25	-9999.25	N/A	IC-N/A	1494.4021	-877.0021
121349	1134.00	-468.60	P on log	LP-ADR	1134	-468.6
121595	1926.00	-1256.30	P on log	LP-ADR	1926	-1256.3
122123	1269.00	-601.40	P on log	LP-ADR	1269	-601.4
123053	-9999.25	-9999.25	N/A	IC-N/A	936.83917	-406.83917
123336	-9999.25	-9999.25	N/A	IC-N/A	1146.9835	-459.98348
123654	-9999.25	-9999.25	N/A	IC-N/A	2620.4145	-1918.6145
123757	-9999.25	-9999.25	N/A	IC-N/A	2387.641	-1869.841
124339	-9999.25	-9999.25	N/A	IC-N/A	2706.4458	-1963.4458
124491	-9999.25	-9999.25	N/A	IC-N/A	2612.09	-1903.39
124493	-9999.25	-9999.25	N/A	IC-N/A	2538.1312	-1920.9312
124522	-9999.25	-9999.25	N/A	IC-N/A	2518.4718	-1791.9718
124524	-9999.25	-9999.25	N/A	IC-N/A	2399.5127	-1907.2127
124638	-9999.25	-9999.25	N/A	IC-N/A	2645.9606	-1936.7606
125043	1491.00	-792.40	P on log	LP-ADR	1491	-792.4
125506	-9999.25	-9999.25	N/A	IC-N/A	1352.1589	-499.65893
125635	-9999.25	-9999.25	N/A	IC-N/A	920.88066	-288.38066
125769	-9999.25	-9999.25	N/A	IC-N/A	1403.262	-638.962
126005	-9999.25	-9999.25	N/A	IC-N/A	1436.246	-778.446
126648	-9999.25	-9999.25	N/A	IC-N/A	1086.3666	-499.66655
126649	-9999.25	-9999.25	N/A	IC-N/A	1473.338	-768.438
126650	-9999.25	-9999.25	N/A	IC-N/A	1488.554	-825.954
126810	-9999.25	-9999.25	N/A	IC-N/A	1278.389	-463.08898
127044	-9999.25	-9999.25	N/A	IC-N/A	1401.564	-630.364
127048	-9999.25	-9999.25	N/A	IC-N/A	1316.855	-526.355
127228	-9999.25	-9999.25	N/A	IC-N/A	2863.1014	-2240.5014
127229	-9999.25	-9999.25	N/A	IC-N/A	3070.8151	-2623.5151
127242	-9999.25	-9999.25	N/A	IC-N/A	1160.467	-513.567
127243	-9999.25	-9999.25	N/A	IC-N/A	1412.1591	-651.0591
127304	-9999.25	-9999.25	N/A	IC-N/A	3440.067	-2819.067
128673	-9999.25	-9999.25	N/A	IC-N/A	3396.9893	-3011.6893
128777	-9999.25	-9999.25	N/A	IC-N/A	2326.817	-1780.717

129065	-9999.25	-9999.25	N/A	IC-N/A	2693.4721	-2047.2721
129425	-9999.25	-9999.25	N/A	IC-N/A	3221.4071	-2789.7071
129907	-9999.25	-9999.25	N/A	IC-N/A	2920.4435	-2300.5435
129908	-9999.25	-9999.25	N/A	IC-N/A	2943.3909	-2373.2909
129973	-9999.25	-9999.25	N/A	IC-N/A	3014.3091	-2415.2091
130060	-9999.25	-9999.25	N/A	IC-N/A	2715.3367	-2274.8367
KGS REC	T7_WDRN _t	T7_SS	T7_pres	T7_src	T7_ana_ MD	T7_ana_SS
130135	-9999.25	-9999.25	N/A	IC-N/A	2157.291	-1439.191
131875	926.00	-331.80	P on log	LP-ADR	926	-331.8
132142	-9999.25	-9999.25	N/A	IC-N/A	3451.4174	-2899.4174
132143	-9999.25	-9999.25	N/A	IC-N/A	3364.0075	-2861.4075
132325	-9999.25	-9999.25	N/A	IC-N/A	1069.6985	-452.5985
132326	-9999.25	-9999.25	N/A	IC-N/A	1051.863	-437.96295
132327	-9999.25	-9999.25	N/A	IC-N/A	1038.792	-469.992
132433	3459.00	-3039.40	P on log	LP-ADR	3459	-3039.4
133831	-9999.25	-9999.25	N/A	IC-N/A	622.50059	-172.40059
134591	-9999.25	-9999.25	N/A	IC-N/A	1396.0103	-800.8103
134670	-9999.25	-9999.25	N/A	IC-N/A	2342.388	-1879.688
135644	-9999.25	-9999.25	N/A	IC-N/A	1413.726	-656.426
135647	-9999.25	-9999.25	N/A	IC-N/A	1600.652	-896.352
136312	-9999.25	-9999.25	N/A	IC-N/A	1550.3478	-1018.6478
136624	-9999.25	-9999.25	N/A	IC-N/A	1040.023	-460.623
136630	-9999.25	-9999.25	N/A	IC-N/A	4104.6749	-3644.6749
136631	-9999.25	-9999.25	N/A	IC-N/A	4072.8873	-3638.7873
137175	-9999.25	-9999.25	N/A	IC-N/A	2149.683	-1657.583
137356	-9999.25	-9999.25	N/A	IC-N/A	1561.364	-957.764
137575	-9999.25	-9999.25	N/A	IC-N/A	1130.658	-517.758
137576	-9999.25	-9999.25	N/A	IC-N/A	1059.228	-423.728
138273	-9999.25	-9999.25	N/A	IC-N/A	1844.1941	-1259.2941
138396	-9999.25	-9999.25	N/A	IC-N/A	1799.4985	-1222.9985
138644	-9999.25	-9999.25	N/A	IC-N/A	2835.1981	-2283.0981
139171	-9999.25	-9999.25	N/A	IC-N/A	2855.6109	-2360.3109
141283	-9999.25	-9999.25	N/A	IC-N/A	1797.8077	-1335.5077
141285	-9999.25	-9999.25	N/A	IC-N/A	1659.6716	-1076.8716
143084	-9999.25	-9999.25	N/A	IC-N/A	3552.2384	-3065.3384
2000111	-9999.25	-9999.25	N/A	IC-N/A	359.59776	405.30224
2029993	-9999.25	-9999.25	N/A	IC-N/A	3000.34	-2389.64
2030235	254.00	499.90	P onlog	LP-ADR	254	499.9
2037542	-9999.25	-9999.25	N/A	IC-N/A	1053.193	-410.593
2037613	-9999.25	-9999.25	N/A	IC-N/A	772.19886	-41.99886
2037770	-9999.25	-9999.25	N/A	IC-N/A	1232.9707	-549.8707
2039921	-9999.25	-9999.25	N/A	IC-N/A	495.905	12.595

2040109	-9999.25	-9999.25	N/A	IC-N/A	1422.3051	-784.1051
2040429	-9999.25	-9999.25	N/A	IC-N/A	636.599	66.201
2040433	-9999.25	-9999.25	N/A	IC-N/A	1892.1475	-1289.5475
2040888	-9999.25	-9999.25	N/A	IC-N/A	2349.4386	-1929.4386
2042187	-9999.25	-9999.25	N/A	IC-N/A	756.45772	-127.25772

#### Appendix IV: Isopach Data

KGS REC	I1_NAS	I1_ana	I1_src
1360	55.00	55.00	LC
1561	50.00	50.00	LC
1612	55.00	55.00	LC
1647	51.00	51.00	LC
1677	45.00	45.00	LC
2089	55.00	55.00	LC
2182	61.00	61.00	LC
2183	66.00	66.00	LC
2619	109.00	109.00	LC
2626	148.00	148.00	LC
2627	201.00	201.00	LC
2628	188.00	188.00	LC
2631	180.00	180.00	LC
8245	66.00	66.00	LC
8247	64.00	64.00	LC
8249	91.00	91.00	LC
8254	116.00	116.00	LC
8255	-9999.25	120.60	E
8268	155.00	155.00	LC
8288	165.50	165.50	LC
8840	157.00	157.00	LC
8852	167.00	167.00	LC
8853	-9999.25	165.72	E
8856	178.00	178.00	LC
8870	182.00	182.00	LC
8884	-9999.25	172.97	E
8922	-9999.25	156.91	E
8929	155.00	155.00	LC
8931	155.00	155.00	LC
8942	168.00	168.00	LC
8949	154.00	154.00	LC
8950	-9999.25	161.09	E
8966	155.00	155.00	LC
8970	114.00	114.00	LC
8974	172.00	172.00	LC
8979	175.00	175.00	LC
8985	114.00	114.00	LC
9892	76.00	76.00	LC
9948	76.00	76.00	LC
10018	73.50	73.50	LC

KGS REC	I1_NAS	I1_ana	I1_src
10037	68.00	68.00	LC
12499	70.00	70.00	LC
12520	95.00	95.00	LC
12534	74.00	74.00	LC
12535	92.00	92.00	LC
12557	-9999.25	83.43	E
12581	97.00	97.00	LC
12585	85.00	85.00	LC
12588	91.00	91.00	LC
12589	87.00	87.00	LC
12611	64.00	64.00	LC
12623	-9999.25	113.59	E
12632	112.00	112.00	LC
12659	100.00	100.00	LC
16942	74.00	74.00	LC
16946	47.00	47.00	LC
16951	63.00	63.00	LC
17423	54.00	54.00	LC
17428	88.00	88.00	LC
17448	72.00	72.00	LC
17470	59.00	59.00	LC
17473	55.00	55.00	LC
17494	101.00	101.00	LC
17496	104.00	104.00	LC
17550	75.20	75.20	LC
17582	62.00	62.00	LC
17588	87.00	87.00	LC
17592	109.50	109.50	LC
17660	92.00	92.00	LC
17687	90.00	90.00	LC
18752	179.00	179.00	LC
21277	47.00	47.00	LC
21322	56.00	56.00	LC
22861	74.00	74.00	LC
23475	94.00	94.00	LC
23477	73.00	73.00	LC
24414	72.00	72.00	LC
24513	68.00	68.00	LC
24518	57.00	57.00	LC
24520	55.00	55.00	LC
24533	97.00	97.00	LC

KGS REC	I1_NAS	I1_ana	I1_src
24862	94.10	94.10	LC
24878	58.00	58.00	LC
24985	89.00	89.00	LC
24987	86.00	86.00	LC
25006	93.00	93.00	LC
25007	56.00	56.00	LC
25065	50.00	50.00	LC
25165	180.00	180.00	LC
26194	60.00	60.00	LC
26231	168.00	168.00	LC
26540	-9999.25	145.76	E
26541	146.70	146.70	LC
26542	133.00	133.00	LC
26543	-9999.25	180.83	E
26544	-9999.25	181.19	E
26549	62.00	62.00	LC
26609	71.00	71.00	LC
26970	93.00	93.00	LC
27009	-9999.25	170.38	E
27145	90.00	90.00	LC
27146	84.00	84.00	LC
27367	119.00	119.00	LC
27852	109.00	109.00	LC
28285	93.00	93.00	LC
28442	-9999.25	164.14	E
28447	158.00	158.00	LC
28458	158.00	158.00	LC
28470	139.00	139.00	LC
29044	96.00	96.00	LC
29071	100.00	100.00	LC
29102	110.00	110.00	LC
30067	67.00	67.00	LC
30090	169.00	169.00	LC
30092	83.50	83.50	LC
30117	67.00	67.00	LC
30118	84.00	84.00	LC
30483	56.00	56.00	LC
30670	106.00	106.00	LC
30794	-9999.25	173.63	E
30795	169.00	169.00	LC
30824	37.00	37.00	LC

KGS REC	I1_NAS	I1_ana	I1_src
31005	47.00	47.00	LC
31018	171.00	171.00	LC
31120	50.00	50.00	LC
31264	107.00	107.00	LC
31394	71.00	71.00	LC
32126	80.00	80.00	LC
32468	86.00	86.00	LC
32641	56.00	56.00	LC
32959	48.00	48.00	LC
33057	66.00	66.00	LC
33896	93.00	93.00	LC
34176	89.00	89.00	LC
34251	100.00	100.00	LC
34413	58.00	58.00	LC
34743	99.00	99.00	LC
35139	79.00	79.00	LC
35370	87.00	87.00	LC
36020	85.00	85.00	LC
36251	-9999.25	169.66	E
36373	-9999.25	169.71	E
36411	102.00	102.00	LC
36701	84.00	84.00	LC
37056	70.00	70.00	LC
37057	64.00	64.00	LC
37064	52.00	52.00	LC
37649	76.00	76.00	LC
37651	89.00	89.00	LC
37710	86.00	86.00	LC
37719	84.00	84.00	LC
37826	106.00	106.00	LC
38267	68.00	68.00	LC
38274	76.00	76.00	LC
38322	-9999.25	168.74	E
38426	46.00	46.00	LC
38932	101.00	101.00	LC
41548	-9999.25	168.38	E
41592	-9999.25	168.02	E
41615	102.00	102.00	LC
41696	58.00	58.00	LC
41697	55.00	55.00	LC
41725	71.00	71.00	LC

KGS REC	I1_NAS	I1_ana	I1_src
41810	60.00	60.00	LC
41947	53.00	53.00	LC
42211	94.00	94.00	LC
42252	54.00	54.00	LC
42524	56.00	56.00	LC
43185	52.00	52.00	LC
43186	57.00	57.00	LC
43551	166.00	166.00	LC
43567	-9999.25	168.12	E
43875	71.00	71.00	LC
43976	62.00	62.00	LC
43985	71.00	71.00	LC
44002	65.00	65.00	LC
44194	107.00	107.00	LC
44391	79.00	79.00	LC
44511	187.00	187.00	LC
44554	47.00	47.00	LC
44735	100.00	100.00	LC
44743	50.00	50.00	LC
44795	87.00	87.00	LC
44796	74.00	74.00	LC
44820	102.00	102.00	LC
44831	62.00	62.00	LC
44884	86.00	86.00	LC
44890	95.00	95.00	LC
44938	56.00	56.00	LC
44942	56.00	56.00	LC
44957	39.00	39.00	LC
44962	113.00	113.00	LC
44964	116.00	116.00	LC
44966	53.00	53.00	LC
45406	79.00	79.00	LC
45408	98.00	98.00	LC
45607	113.00	113.00	LC
45907	84.00	84.00	LC
46168	166.00	166.00	LC
46193	165.00	165.00	LC
46768	165.00	165.00	LC
46770	82.00	82.00	LC
46810	72.00	72.00	LC
47882	47.00	47.00	LC

KGS REC	I1_NAS	I1_ana	I1_src
47936	165.00	165.00	LC
48080	235.00	235.00	LC
48511	74.00	74.00	LC
48678	59.00	59.00	LC
48712	81.00	81.00	LC
48915	103.00	103.00	LC
49185	77.00	77.00	LC
49529	70.00	70.00	LC
50331	100.00	100.00	LC
50333	101.00	101.00	LC
50439	64.00	64.00	LC
50832	63.00	63.00	LC
50878	42.00	42.00	LC
51143	42.00	42.00	LC
51478	166.00	166.00	LC
51636	85.00	85.00	LC
53626	72.00	72.00	LC
53903	83.00	83.00	LC
54301	194.00	194.00	LC
54921	69.00	69.00	LC
55626	74.00	74.00	LC
57212	171.00	171.00	LC
57253	85.00	85.00	LC
57369	110.00	110.00	LC
57470	94.00	94.00	LC
57726	80.00	80.00	LC
57764	58.00	58.00	LC
58703	47.00	47.00	LC
59328	115.00	115.00	LC
60392	151.00	151.00	LC
60463	52.00	52.00	LC
60620	133.00	133.00	LC
60647	77.00	77.00	LC
60784	194.00	194.00	LC
61104	56.00	56.00	LC
61708	44.00	44.00	LC
61894	143.00	143.00	LC
61911	52.00	52.00	LC
64431	59.00	59.00	LC
64550	-9999.25	124.66	E
64561	68.00	68.00	LC

KGS REC	I1_NAS	I1_ana	I1_src
64699	101.00	101.00	LC
65374	114.00	114.00	LC
66140	69.00	69.00	LC
66243	54.00	54.00	LC
66398	86.00	86.00	LC
66515	117.00	117.00	LC
67124	48.00	48.00	LC
67275	90.00	90.00	LC
68018	102.00	102.00	LC
69043	91.00	91.00	LC
69391	91.00	91.00	LC
70030	82.00	82.00	LC
70521	73.00	73.00	LC
70700	94.00	94.00	LC
71650	104.00	104.00	LC
72123	117.00	117.00	LC
74160	67.00	67.00	LC
75341	50.00	50.00	LC
75437	93.00	93.00	LC
76317	-9999.25	65.94	E
76798	70.00	70.00	LC
77043	78.00	78.00	LC
77871	-9999.25	60.56	E
77995	98.00	98.00	LC
78566	55.00	55.00	LC
78573	105.00	105.00	LC
79583	88.00	88.00	LC
80622	82.00	82.00	LC
80871	73.00	73.00	LC
81073	66.00	66.00	LC
81187	-9999.25	54.90	E
81188	-9999.25	54.60	E
81454	81.00	81.00	LC
81821	57.00	57.00	LC
82547	52.00	52.00	LC
82646	50.00	50.00	LC
82869	100.00	100.00	LC
82961	46.00	46.00	LC
83200	97.00	97.00	LC
83643	99.00	99.00	LC
84897	100.00	100.00	LC

KGS REC	I1_NAS	I1_ana	I1_src
85857	78.00	78.00	LC
85898	92.00	92.00	LC
86110	39.00	39.00	LC
86659	75.00	75.00	LC
87133	71.00	71.00	LC
87342	61.00	61.00	LC
87691	103.00	103.00	LC
88126	161.00	161.00	LC
88310	51.00	51.00	LC
88519	51.00	51.00	LC
88720	110.00	110.00	LC
88824	119.00	119.00	LC
89627	100.00	100.00	LC
89864	135.00	135.00	LC
89887	193.00	193.00	LC
89889	215.00	215.00	LC
90181	89.00	89.00	LC
91075	153.00	153.00	LC
92068	55.00	55.00	LC
92622	54.00	54.00	LC
93190	54.00	54.00	LC
93217	69.00	69.00	LC
100378	95.00	95.00	LC
101078	56.00	56.00	LC
101580	73.00	73.00	LC
101593	156.00	156.00	LC
101596	103.00	103.00	LC
101599	-9999.25	160.81	E
101654	51.80	51.80	LC
101660	74.00	74.00	LC
101732	73.00	73.00	LC
101733	88.00	88.00	LC
102191	58.00	58.00	LC
102215	54.00	54.00	LC
102491	110.00	110.00	LC
102827	161.00	161.00	LC
103416	69.00	69.00	LC
103481	70.00	70.00	LC
103599	106.00	106.00	LC
104457	67.00	67.00	LC
104458	65.00	65.00	LC

KGS REC	I1_NAS	I1_ana	I1_src
104459	69.00	69.00	LC
104629	160.00	160.00	LC
105693	68.00	68.00	LC
105694	55.00	55.00	LC
106588	46.00	46.00	LC
107711	68.00	68.00	LC
107951	112.00	112.00	LC
108682	93.00	93.00	LC
108819	90.00	90.00	LC
109059	93.00	93.00	LC
109085	82.00	82.00	LC
109279	114.00	114.00	LC
109338	91.00	91.00	LC
109440	96.00	96.00	LC
109472	96.00	96.00	LC
109556	111.00	111.00	LC
109750	95.00	95.00	LC
109818	212.00	212.00	LC
110720	71.00	71.00	LC
110810	91.00	91.00	LC
110873	91.00	91.00	LC
111111	121.00	121.00	LC
111317	97.00	97.00	LC
111535	96.00	96.00	LC
111582	90.00	90.00	LC
111583	90.00	90.00	LC
111698	96.00	96.00	LC
111711	97.00	97.00	LC
111826	78.00	78.00	LC
111833	97.00	97.00	LC
111866	107.00	107.00	LC
112219	108.00	108.00	LC
112229	-9999.25	138.43	E
112277	96.10	96.10	LC
112288	111.00	111.00	LC
112435	78.00	78.00	LC
112764	75.00	75.00	LC
113002	80.00	80.00	LC
113076	112.00	112.00	LC
113543	72.00	72.00	LC
113949	96.00	96.00	LC

KGS REC	I1_NAS	I1_ana	I1_src
114144	95.00	95.00	LC
114292	169.20	169.20	LC
114341	79.00	79.00	LC
114661	195.00	195.00	LC
115223	90.00	90.00	LC
115312	122.00	122.00	LC
115429	126.00	126.00	LC
120335	51.00	51.00	LC
120748	93.00	93.00	LC
121349	67.00	67.00	LC
121595	109.00	109.00	LC
122123	70.00	70.00	LC
123053	70.00	70.00	LC
123336	69.00	69.00	LC
123654	175.00	175.00	LC
123757	166.00	166.00	LC
124339	165.00	165.00	LC
124491	162.00	162.00	LC
124493	155.00	155.00	LC
124522	168.00	168.00	LC
124524	162.00	162.00	LC
124638	169.00	169.00	LC
125043	76.00	76.00	LC
125506	66.00	66.00	LC
125635	72.00	72.00	LC
125769	69.00	69.00	LC
126005	75.00	75.00	LC
126648	67.00	67.00	LC
126649	78.00	78.00	LC
126650	77.00	77.00	LC
126810	63.00	63.00	LC
127044	69.00	69.00	LC
127048	66.00	66.00	LC
127228	-9999.25	182.79	E
127229	191.00	191.00	LC
127242	67.00	67.00	LC
127243	73.00	73.00	LC
127304	202.00	202.00	LC
128673	180.00	180.00	LC
128777	182.00	182.00	LC
129065	165.20	165.20	LC

KGS REC	I1_NAS	I1_ana	I1_src
129425	182.00	182.00	LC
129907	185.00	185.00	LC
129908	188.00	188.00	LC
129973	188.00	188.00	LC
130060	184.00	184.00	LC
130135	148.00	148.00	LC
131875	64.00	64.00	LC
132142	149.00	149.00	LC
132143	152.00	152.00	LC
132325	67.00	67.00	LC
132326	62.00	62.00	LC
132327	66.00	66.00	LC
132433	151.00	151.00	LC
133831	57.00	57.00	LC
134591	80.00	80.00	LC
134670	131.00	131.00	LC
135644	73.00	73.00	LC
135647	86.00	86.00	LC
136312	90.00	90.00	LC
136624	66.00	66.00	LC
136630	163.00	163.00	LC
136631	165.00	165.00	LC
137175	120.00	120.00	LC
137356	92.00	92.00	LC
137575	74.00	74.00	LC
137576	67.00	67.00	LC
138273	106.00	106.00	LC
138396	101.00	101.00	LC
138644	135.00	135.00	LC
139171	137.00	137.00	LC
141283	114.00	114.00	LC
141285	98.00	98.00	LC
143084	150.00	150.00	LC
2000111	45.00	45.00	LC
2029993	142.00	142.00	LC
2030235	37.00	37.00	LC
2037542	65.00	65.00	LC
2037613	52.00	52.00	LC
2037770	66.00	66.00	LC
2039921	52.30	52.30	LC
2040109	74.00	74.00	LC

KGS REC	I1_NAS	I1_ana	I1_src
2040429	57.30	57.30	LC
2040433	105.00	105.00	LC
2040888	130.00	130.00	LC
2042187	57.70	57.70	LC

KGS REC	I2_UDCN	I2_ana	I2_src
1360	0.00	0	LC
1561	0.00	0	LC
1612	0.00	0	LC
1647	0.00	0	LC
1677	0.00	0	LC
2089	0.00	0	LC
2182	0.00	0	LC
2183	0.00	0	LC
2619	60.00	60	LC
2626	100.00	100	LC
2627	62.00	62	LC
2628	56.00	56	LC
2631	142.00	142	LC
8245	-9999.25	17.7665	E
8247	-9999.25	20.707	E
8249	50.00	50	LC
8254	-9999.25	67.9443	E
8255	-9999.25	65.3001	E
8268	-9999.25	68.1101	E
8288	-9999.25	97.1951	E
8840	-9999.25	94.226	E
8852	-9999.25	95.9949	E
8853	-9999.25	97.953	E
8856	-9999.25	108.908	E
8870	-9999.25	115.076	E
8884	-9999.25	110.617	E
8922	-9999.25	90.7703	E
8929	-9999.25	90.293	E
8931	-9999.25	92.7275	E
8942	-9999.25	99.5619	E
8949	-9999.25	95.7953	E
8950	-9999.25	95.5374	E
8966	85.20	85.2	LC
8970	50.00	50	LC

KGS REC	I2_UDCN	I2_ana	I2_src
8974	114.00	114	LC
8979	135.00	135	LC
8985	80.00	80	LC
9892	0.00	0	LC
9948	0.00	0	LC
10018	0.00	12	LC
10037	0.00	0	LC
12499	3.00	3	LC
12520	76.00	76	LC
12534	-9999.25	42.6862	E
12535	-9999.25	41.5061	E
12557	-9999.25	38.8866	E
12581	94.00	94	LC
12585	41.00	41	LC
12588	75.00	75	LC
12589	42.00	42	LC
12611	138.00	138	LC
12623	-9999.25	76.4363	E
12632	80.00	80	LC
12659	54.00	54	LC
16942	-9999.25	37.3029	E
16946	63.00	63	LC
16951	0.00	0	LC
17423	0.00	0	LC
17428	51.00	51	LC
17448	38.00	38	LC
17470	9.00	9	LC
17473	10.00	10	LC
17494	50.00	50	LC
17496	56.00	56	LC
17550	39.20	39.2	LC
17582	-9999.25	18.1268	E
17588	82.00	82	LC
17592	68.20	68.2	LC
17660	52.00	52	LC
17687	46.00	46	LC
18752	-9999.25	86.3424	E
21277	0.00	0	LC
21322	0.00	0	LC
22861	0.00	0	LC
23475	67.00	67	LC

KGS REC	I2_UDCN	I2_ana	I2_src
23477	24.00	24	LC
24414	-9999.25	18.5221	E
24513	35.30	35.3	LC
24518	0.00	0	LC
24520	-9999.25	4.24106	E
24533	46.00	46	LC
24862	56.00	56	LC
24878	24.00	24	LC
24985	52.00	52	LC
24987	-9999.25	46.5466	E
25006	-9999.25	49.4526	E
25007	-9999.25	2.66925	E
25065	-9999.25	1.15836	E
25165	118.00	118	LC
26194	0.00	0	LC
26231	-9999.25	108.116	E
26540	-9999.25	97.8864	E
26541	-9999.25	94.2743	E
26542	-9999.25	84.2649	E
26543	-9999.25	115.691	E
26544	-9999.25	116.076	E
26549	-9999.25	23.0844	E
26609	29.00	29	LC
26970	55.00	55	LC
27009	-9999.25	106.272	E
27145	53.00	53	LC
27146	-9999.25	60.0266	E
27367	62.00	62	LC
27852	-9999.25	25.8403	E
28285	50.00	50	LC
28442	-9999.25	91.5024	E
28447	-9999.25	95.6703	E
28458	-9999.25	92.696	E
28470	-9999.25	68.8617	E
29044	44.30	44.3	LC
29071	43.00	43	LC
29102	76.00	76	LC
30067	0.00	0	LC
30090	-9999.25	103.211	E
30092	-9999.25	43.4289	E
30117	39.00	39	LC

KGS REC	I2_UDCN	I2_ana	I2_src
30118	55.00	55	LC
30483	-9999.25	9.87403	E
30670	64.00	64	LC
30794	-9999.25	110.014	E
30795	-9999.25	108.484	E
30824	0.00	0	LC
31005	0.00	0	LC
31018	-9999.25	103.836	E
31120	-9999.25	6.44961	E
31264	-9999.25	70.2724	E
31394	0.00	0	LC
32126	41.00	41	LC
32468	38.00	38	LC
32641	0.00	0	LC
32959	0.00	0	LC
33057	21.90	21.9	LC
33896	46.00	46	LC
34176	32.00	32	LC
34251	57.00	57	LC
34413	-9999.25	6.73183	E
34743	62.00	62	LC
35139	40.00	40	LC
35370	48.00	48	LC
36020	57.00	57	LC
36251	-9999.25	104.07	E
36373	-9999.25	109.159	E
36411	59.00	59	LC
36701	47.00	47	LC
37056	18.00	18	LC
37057	11.00	11	LC
37064	0.00	0	LC
37649	40.00	40	LC
37651	54.00	54	LC
37710	43.00	43	LC
37719	43.00	43	LC
37826	70.00	70	LC
38267	38.00	38	LC
38274	40.00	40	LC
38322	-9999.25	102.468	E
38426	0.00	0	LC
38932	64.00	64	LC

KGS REC	I2_UDCN	I2_ana	I2_src
41548	-9999.25	102.561	E
41592	-9999.25	101.876	E
41615	54.00	54	LC
41696	-9999.25	10.779	E
41697	-9999.25	10.2143	E
41725	29.00	29	LC
41810	14.00	14	LC
41947	-9999.25	6.07137	E
42211	46.00	46	LC
42252	-9999.25	6.32806	E
42524	-9999.25	7.82898	E
43185	0.00	0	LC
43186	-9999.25	0	E
43551	-9999.25	108.664	E
43567	-9999.25	109.133	E
43875	20.00	20	LC
43976	-9999.25	11.3049	E
43985	-9999.25	11.9207	E
44002	0.00	0	LC
44194	56.00	56	LC
44391	46.00	46	LC
44511	114.00	114	LC
44554	-9999.25	0.83129	E
44735	65.00	65	LC
44743	0.00	0	LC
44795	46.00	46	LC
44796	40.00	40	LC
44820	52.00	52	LC
44831	-9999.25	21.5365	E
44884	55.00	55	LC
44890	50.00	50	LC
44938	-9999.25	12.31	E
44942	-9999.25	11.3206	E
44957	-9999.25	24.7034	E
44962	71.00	71	LC
44964	96.00	96	LC
44966	-9999.25	8.67928	E
45406	36.00	36	LC
45408	72.00	72	LC
45607	91.00	91	LC
45907	48.00	48	LC

KGS REC	I2_UDCN	I2_ana	I2_src
46168	-9999.25	110.051	E
46193	-9999.25	108.591	E
46768	-9999.25	107.618	E
46770	39.00	39	LC
46810	34.00	34	LC
47882	0.00	0	LC
47936	-9999.25	111.488	E
48080	145.00	145	LC
48511	32.00	32	LC
48678	-9999.25	10.4161	E
48712	-9999.25	43.4655	E
48915	61.00	61	LC
49185	41.00	41	LC
49529	37.00	37	LC
50331	60.00	60	LC
50333	61.00	61	LC
50439	0.00	0	LC
50832	0.00	0	LC
50878	0.00	0	LC
51143	0.00	0	LC
51478	-9999.25	106.313	E
51636	40.00	40	LC
53626	24.00	24	LC
53903	43.00	43	LC
54301	-9999.25	97.3742	E
54921	-9999.25	43.2564	E
55626	42.00	42	LC
57212	148.00	148	LC
57253	65.00	65	LC
57369	35.00	35	LC
57470	60.00	60	LC
57726	25.00	25	LC
57764	0.00	0	LC
58703	0.00	0	LC
59328	125.00	125	LC
60392	-9999.25	89.1211	E
60463	-9999.25	12.8065	E
60620	-9999.25	88.5154	E
60647	42.00	42	LC
60784	-9999.25	116.532	E
61104	-9999.25	17.4102	E

KGS REC	I2_UDCN	I2_ana	I2_src
61708	0.00	0	LC
61894	98.00	98	LC
61911	0.00	0	LC
64431	0.00	0	LC
64550	-9999.25	81.9138	E
64561	37.00	37	LC
64699	67.00	67	LC
65374	77.00	77	LC
66140	0.00	0	LC
66243	-9999.25	5.25652	E
66398	45.00	45	LC
66515	103.00	103	LC
67124	-9999.25	0	E
67275	49.00	49	LC
68018	66.00	66	LC
69043	51.00	51	LC
69391	54.00	54	LC
70030	45.00	45	LC
70521	43.00	43	LC
70700	46.00	46	LC
71650	62.00	62	LC
72123	94.00	94	LC
74160	23.00	23	LC
75341	0.00	0	LC
75437	59.00	59	LC
76317	-9999.25	35.1115	E
76798	-9999.25	35.5254	E
77043	40.00	40	LC
77871	-9999.25	29.4476	E
77995	53.00	53	LC
78566	17.00	17	LC
78573	59.00	59	LC
79583	47.00	47	LC
80622	42.00	42	LC
80871	37.10	37.1	LC
81073	-9999.25	34.3547	E
81187	-9999.25	18.2649	E
81188	-9999.25	19.4983	E
81454	41.00	41	LC
81821	-9999.25	37.9724	E
82547	0.00	0	LC

KGS REC	I2_UDCN	I2_ana	I2_src
82646	-9999.25	3.56085	E
82869	46.00	46	LC
82961	-9999.25	3.15712	E
83200	52.00	52	LC
83643	57.00	57	LC
84897	60.00	60	LC
85857	41.00	41	LC
85898	70.00	70	LC
86110	0.00	0	LC
86659	-9999.25	38.3365	E
87133	38.00	38	LC
87342	22.00	22	LC
87691	72.00	72	LC
88126	113.00	113	LC
88310	25.00	25	LC
88519	0.00	0	LC
88720	88.00	88	LC
88824	72.00	72	LC
89627	-9999.25	47.4257	E
89864	91.00	91	LC
89887	371.00	371	LC
89889	394.00	394	LC
90181	50.00	50	LC
91075	-9999.25	99.0049	E
92068	0.00	0	LC
92622	-9999.25	8.39334	E
93190	-9999.25	0.24946	E
93217	0.00	0	LC
100378	75.00	75	LC
101078	-9999.25	10.7231	E
101580	-9999.25	8.86103	E
101593	101.00	101	LC
101596	59.00	59	LC
101599	-9999.25	96.5084	E
101654	-9999.25	3.65826	E
101660	-9999.25	25.1706	E
101732	12.00	12	LC
101733	64.00	64	LC
102191	-9999.25	16.1879	E
102215	-9999.25	11.6116	E
102491	69.00	69	LC

KGS REC	I2_UDCN	I2_ana	I2_src
102827	105.00	105	LC
103416	0.00	0	LC
103481	-9999.25	6.83938	E
103599	68.00	68	LC
104457	0.00	0	LC
104458	0.00	0	LC
104459	-9999.25	21.0175	E
104629	102.00	102	LC
105693	28.00	28	LC
105694	0.00	0	LC
106588	0.00	0	LC
107711	97.00	97	LC
107951	96.00	96	LC
108682	50.00	50	LC
108819	51.00	51	LC
109059	50.00	50	LC
109085	46.00	46	LC
109279	63.00	63	LC
109338	52.00	52	LC
109440	50.00	50	LC
109472	51.00	51	LC
109556	63.00	63	LC
109750	56.00	56	LC
109818	178.00	178	LC
110720	0.00	0	LC
110810	49.00	49	LC
110873	52.00	52	LC
111111	78.00	78	LC
111317	69.00	69	LC
111535	40.00	40	LC
111582	57.00	57	LC
111583	54.00	54	LC
111698	-9999.25	46.4978	E
111711	60.00	60	LC
111826	50.00	50	LC
111833	63.00	63	LC
111866	57.00	57	LC
112219	68.00	68	LC
112229	-9999.25	89.8103	E
112277	64.00	64	LC
112288	82.00	82	LC

KGS REC	I2_UDCN	I2_ana	I2_src
112435	21.00	21	LC
112764	43.00	43	LC
113002	19.90	19.9	LC
113076	63.00	63	LC
113543	0.00	0	LC
113949	48.00	48	LC
114144	70.00	70	LC
114292	-9999.25	113.488	E
114341	-9999.25	29.5173	E
114661	136.00	136	LC
115223	30.00	30	LC
115312	82.00	82	LC
115429	113.00	113	LC
120335	0.00	0	LC
120748	45.00	45	LC
121349	0.00	0	LC
121595	87.00	87	LC
122123	0.00	0	LC
123053	-9999.25	5.23149	E
123336	-9999.25	10.5758	E
123654	-9999.25	112.516	E
123757	-9999.25	102.869	E
124339	-9999.25	110.082	E
124491	-9999.25	107.849	E
124493	-9999.25	103.63	E
124522	-9999.25	99.818	E
124524	-9999.25	105.176	E
124638	-9999.25	113.802	E
125043	29.00	29	LC
125506	48.00	48	LC
125635	-9999.25	21.1892	E
125769	25.00	25	LC
126005	28.00	28	LC
126648	-9999.25	18.7692	E
126649	42.00	42	LC
126650	44.00	44	LC
126810	31.00	31	LC
127044	36.00	36	LC
127048	20.00	20	LC
127228	-9999.25	116.031	E
127229	-9999.25	117.391	E

KGS REC	I2_UDCN	I2_ana	I2_src
127242	31.00	31	LC
127243	34.00	34	LC
127304	-9999.25	110.93	E
128673	98.00	98	LC
128777	-9999.25	111.023	E
129065	-9999.25	114.478	E
129425	69.00	69	LC
129907	-9999.25	108.487	E
129908	-9999.25	111.561	E
129973	-9999.25	105.356	E
130060	-9999.25	101.953	E
130135	-9999.25	83.998	E
131875	20.00	20	LC
132142	94.00	94	LC
132143	49.00	49	LC
132325	36.00	36	LC
132326	39.00	39	LC
132327	39.00	39	LC
132433	109.00	109	LC
133831	-9999.25	11.9307	E
134591	40.00	40	LC
134670	89.00	89	LC
135644	35.00	35	LC
135647	51.00	51	LC
136312	46.00	46	LC
136624	-9999.25	24.5251	E
136630	117.00	117	LC
136631	57.00	57	LC
137175	91.00	91	LC
137356	55.00	55	LC
137575	32.00	32	LC
137576	17.00	17	LC
138273	-9999.25	64.8972	E
138396	56.00	56	LC
138644	-9999.25	97.406	E
139171	-9999.25	97.9179	E
141283	80.00	80	LC
141285	57.00	57	LC
143084	112.00	112	LC
2000111	-9999.25	5.30627	E
2029993	103.00	103	LC

KGS REC	I2_UDCN	I2_ana	I2_src
2030235	0.00	0	LC
2037542	-9999.25	32.3078	E
2037613	-9999.25	23.3874	E
2037770	-9999.25	34.7683	E
2039921	0.00	0	LC
2040109	-9999.25	40.5453	E
2040429	0.00	0	LC
2040433	59.00	59	LC
2040888	101.00	101	LC
2042187	-9999.25	10.3046	E

KGS REC	I3_CLCK	I3_ana	I3_src
1360	0.00	0	LC
1561	0.00	0	LC
1612	0.00	0	LC
1647	0.00	0	LC
1677	0.00	0	LC
2089	0.00	0	LC
2182	0.00	0	LC
2183	0.00	0	LC
2619	230.00	230	LC
2626	194.00	194	LC
2627	417.00	417	LC
2628	380.00	380	LC
2631	316.00	316	LC
8245	-9999.25	25.1232	E
8247	-9999.25	30.3913	E
8249	56.00	56	LC
8254	-9999.25	87.8575	E
8255	-9999.25	83.9374	E
8268	-9999.25	89.5216	E
8288	-9999.25	167.579	E
8840	-9999.25	154.863	E
8852	-9999.25	168.726	E
8853	-9999.25	178.675	E
8856	-9999.25	301.175	E
8870	-9999.25	284.588	E
8884	-9999.25	232.65	E
8922	-9999.25	170.561	E
8929	-9999.25	166.356	E

KGS REC	I3_CLKC	I3_ana	I3_src
8931	-9999.25	167.403	E
8942	-9999.25	191.167	E
8949	-9999.25	183.466	E
8950	-9999.25	178.441	E
8966	238.00	238	LC
8970	55.00	55	LC
8974	443.00	443	LC
8979	365.00	365	LC
8985	132.00	132	LC
9892	0.00	0	LC
9948	0.00	0	LC
10018	0.00	0	LC
10037	0.00	0	LC
12499	60.00	60	LC
12520	103.00	103	LC
12534	-9999.25	79.3762	E
12535	-9999.25	75.8698	E
12557	-9999.25	68.8558	E
12581	-9999.25	108.516	E
12585	69.00	69	LC
12588	-9999.25	102.463	E
12589	107.00	107	LC
12611	-9999.25	176.784	E
12623	-9999.25	171.234	E
12632	180.00	180	LC
12659	-9999.25	120.456	E
16942	-9999.25	69.1713	E
16946	42.00	42	LC
16951	0.00	0	LC
17423	0.00	0	LC
17428	82.00	82	LC
17448	58.00	58	LC
17470	30.00	30	LC
17473	62.00	62	LC
17494	116.00	116	LC
17496	-9999.25	133.647	E
17550	64.00	64	LC
17582	-9999.25	28.0465	E
17588	-9999.25	192.224	E
17592	-9999.25	136.188	E
17660	74.00	74	LC
17687	56.00	56	LC

KGS REC	I3_CLKC	I3_ana	I3_src
18752	-9999.25	248.294	E
21277	0.00	0	LC
21322	0.00	0	LC
22861	0.00	0	LC
23475	107.00	107	LC
23477	45.00	45	LC
24414	-9999.25	25.2023	E
24513	70.00	70	LC
24518	0.00	0	LC
24520	-9999.25	12.7834	E
24533	116.00	116	LC
24862	66.00	66	LC
24878	37.00	37	LC
24985	76.00	76	LC
24987	-9999.25	54.6418	E
25006	-9999.25	101.963	E
25007	-9999.25	10.2111	E
25065	-9999.25	3.90838	E
25165	488.00	488	LC
26194	0.00	0	LC
26231	-9999.25	211.68	E
26540	-9999.25	176.231	E
26541	-9999.25	167.442	E
26542	-9999.25	138.147	E
26543	-9999.25	294.926	E
26544	-9999.25	296.023	E
26549	-9999.25	34.0523	E
26609	99.00	99	LC
26970	83.00	83	LC
27009	-9999.25	210.602	E
27145	81.00	81	LC
27146	-9999.25	84.0918	E
27367	139.00	139	LC
27852	-9999.25	42.9606	E
28285	-9999.25	103.776	E
28442	-9999.25	190.249	E
28447	-9999.25	184.916	E
28458	-9999.25	161.444	E
28470	-9999.25	109.608	E
29044	122.00	122	LC
29071	105.00	105	LC

KGS REC	I3_CLKC	I3_ana	I3_src
29102	105.00	105	LC
30067	0.00	0	LC
30090	-9999.25	195.784	E
30092	-9999.25	86.0052	E
30117	59.00	59	LC
30118	68.00	68	LC
30483	-9999.25	20.192	E
30670	-9999.25	119.857	E
30794	-9999.25	232.835	E
30795	-9999.25	214.581	E
30824	0.00	0	LC
31005	0.00	0	LC
31018	-9999.25	198.068	E
31120	-9999.25	6.51319	E
31264	-9999.25	141.123	E
31394	0.00	0	LC
32126	60.00	60	LC
32468	93.00	93	LC
32641	0.00	0	LC
32959	0.00	0	LC
33057	53.00	53	LC
33896	-9999.25	115.315	E
34176	58.00	58	LC
34251	141.00	141	LC
34413	-9999.25	10.2792	E
34743	99.00	99	LC
35139	72.00	72	LC
35370	69.00	69	LC
36020	-9999.25	95.8796	E
36251	-9999.25	205.199	E
36373	-9999.25	218.327	E
36411	80.00	80	LC
36701	109.00	109	LC
37056	38.00	38	LC
37057	24.00	24	LC
37064	0.00	0	LC
37649	60.00	60	LC
37651	-9999.25	90.4487	E
37710	63.00	63	LC
37719	66.00	66	LC
37826	-9999.25	138.799	E

KGS REC	I3_CLKC	I3_ana	I3_src
38267	62.00	62	LC
38274	55.00	55	LC
38322	-9999.25	198.975	E
38426	0.00	0	LC
38932	118.00	118	LC
41548	-9999.25	194.844	E
41592	-9999.25	192.61	E
41615	75.00	75	LC
41696	-9999.25	23.7691	E
41697	-9999.25	23.1185	E
41725	36.00	36	LC
41810	30.00	30	LC
41947	-9999.25	15.5917	E
42211	-9999.25	66.757	E
42252	-9999.25	16.1094	E
42524	-9999.25	18.5692	E
43185	0.00	0	LC
43186	-9999.25	0	E
43551	-9999.25	214.133	E
43567	-9999.25	216.153	E
43875	79.00	79	LC
43976	-9999.25	15.6939	E
43985	-9999.25	16.0281	E
44002	0.00	0	LC
44194	185.00	185	LC
44391	31.00	31	LC
44511	321.00	321	LC
44554	-9999.25	1.63096	E
44735	-9999.25	86.8889	E
44743	0.00	0	LC
44795	78.00	78	LC
44796	69.00	69	LC
44820	72.00	72	LC
44831	-9999.25	30.2934	E
44884	96.00	96	LC
44890	-9999.25	98.7874	E
44938	-9999.25	28.2333	E
44942	-9999.25	27.0537	E
44957	-9999.25	39.6442	E
44962	147.00	147	LC
44964	-9999.25	100.374	E

KGS REC	I3_CLKC	I3_ana	I3_src
44966	-9999.25	21.0248	E
45406	76.00	76	LC
45408	-9999.25	81.4079	E
45607	-9999.25	143.893	E
45907	-9999.25	88.5364	E
46168	-9999.25	218.344	E
46193	-9999.25	214.618	E
46768	-9999.25	205.546	E
46770	71.00	71	LC
46810	-9999.25	64.3347	E
47882	0.00	0	LC
47936	-9999.25	228.589	E
48080	280.00	280	LC
48511	75.00	75	LC
48678	-9999.25	17.3416	E
48712	-9999.25	83.2953	E
48915	-9999.25	101.683	E
49185	70.00	70	LC
49529	-9999.25	61.4039	E
50331	100.00	100	LC
50333	104.00	104	LC
50439	0.00	0	LC
50832	0.00	0	LC
50878	0.00	0	LC
51143	0.00	0	LC
51478	-9999.25	197.303	E
51636	92.00	92	LC
53626	53.00	53	LC
53903	-9999.25	87.1655	E
54301	-9999.25	321.178	E
54921	-9999.25	57.7422	E
55626	-9999.25	71.988	E
57212	240.00	240	LC
57253	83.00	83	LC
57369	77.00	77	LC
57470	104.00	104	LC
57726	37.00	37	LC
57764	0.00	0	LC
58703	0.00	0	LC
59328	130.00	130	LC
60392	-9999.25	169.303	E

KGS REC	I3_CLCK	I3_ana	I3_src
60463	-9999.25	11.2591	E
60620	-9999.25	231.585	E
60647	-9999.25	79.195	E
60784	-9999.25	318.119	E
61104	-9999.25	36.2792	E
61708	0.00	0	LC
61894	282.00	282	LC
61911	0.00	0	LC
64431	0.00	0	LC
64550	-9999.25	142.721	E
64561	54.00	54	LC
64699	136.00	136	LC
65374	-9999.25	168.235	E
66140	0.00	0	LC
66243	-9999.25	14.0541	E
66398	78.00	78	LC
66515	-9999.25	87.8791	E
67124	-9999.25	1.4655	E
67275	-9999.25	99.0713	E
68018	-9999.25	119.27	E
69043	54.00	54	LC
69391	-9999.25	61.3296	E
70030	81.00	81	LC
70521	70.00	70	LC
70700	145.00	145	LC
71650	-9999.25	106.577	E
72123	-9999.25	107.513	E
74160	-9999.25	63.3226	E
75341	0.00	0	LC
75437	92.00	92	LC
76317	-9999.25	49.0764	E
76798	-9999.25	48.0846	E
77043	94.00	94	LC
77871	-9999.25	50.2924	E
77995	-9999.25	109.491	E
78566	14.00	14	LC
78573	106.00	106	LC
79583	101.00	101	LC
80622	92.00	92	LC
80871	41.00	41	LC
81073	-9999.25	43.6034	E

KGS REC	I3_CLKC	I3_ana	I3_src
81187	-9999.25	33.8226	E
81188	-9999.25	34.0451	E
81454	54.00	54	LC
81821	-9999.25	47.6828	E
82547	0.00	0	LC
82646	-9999.25	7.87866	E
82869	133.00	133	LC
82961	-9999.25	3.43422	E
83200	-9999.25	69.3514	E
83643	-9999.25	73.4074	E
84897	120.00	120	LC
85857	73.00	73	LC
85898	-9999.25	82.1256	E
86110	0.00	0	LC
86659	-9999.25	54.81	E
87133	42.00	42	LC
87342	14.00	14	LC
87691	-9999.25	79.1313	E
88126	271.00	271	LC
88310	50.00	50	LC
88519	0.00	0	LC
88720	161.00	161	LC
88824	-9999.25	201.897	E
89627	-9999.25	95.8113	E
89864	-9999.25	222.836	E
89887	-9999.25	295.014	E
89889	180.00	288.041	E
90181	57.00	57	LC
91075	-9999.25	250.658	E
92068	0.00	0	LC
92622	-9999.25	18.3986	E
93190	-9999.25	4.30714	E
93217	0.00	0	LC
100378	72.00	72	LC
101078	-9999.25	22.7372	E
101580	-9999.25	11.7877	E
101593	-9999.25	175.952	E
101596	-9999.25	62.4211	E
101599	-9999.25	156.566	E
101654	-9999.25	10.1956	E
101660	-9999.25	25.4751	E

KGS REC	I3_CLKC	I3_ana	I3_src
101732	33.00	33	LC
101733	-9999.25	92.0645	E
102191	-9999.25	31.6684	E
102215	-9999.25	24.825	E
102491	134.00	134	LC
102827	243.00	243	LC
103416	0.00	0	LC
103481	-9999.25	9.48783	E
103599	-9999.25	148.817	E
104457	0.00	0	LC
104458	0.00	0	LC
104459	-9999.25	25.1051	E
104629	250.00	250	LC
105693	70.00	70	LC
105694	0.00	0	LC
106588	0.00	0	LC
107711	192.00	192	LC
107951	158.00	158	LC
108682	63.00	63	LC
108819	59.00	59	LC
109059	29.00	29	LC
109085	28.00	28	LC
109279	191.00	191	LC
109338	48.00	48	LC
109440	60.00	60	LC
109472	58.00	58	LC
109556	101.00	101	LC
109750	61.00	61	LC
109818	522.00	522	LC
110720	0.00	0	LC
110810	49.00	49	LC
110873	118.00	118	LC
111111	188.00	188	LC
111317	59.00	59	LC
111535	140.00	140	LC
111582	40.00	40	LC
111583	44.00	44	LC
111698	-9999.25	53.7261	E
111711	122.00	122	LC
111826	74.00	74	LC
111833	54.00	54	LC

KGS REC	I3_CLKC	I3_ana	I3_src
111866	186.00	186	LC
112219	126.00	126	LC
112229	-9999.25	227.717	E
112277	-9999.25	59.3957	E
112288	196.00	196	LC
112435	41.00	41	LC
112764	47.00	47	LC
113002	30.00	30	LC
113076	181.00	181	LC
113543	0.00	0	LC
113949	50.00	50	LC
114144	-9999.25	49.2931	E
114292	-9999.25	235.594	E
114341	-9999.25	38.7019	E
114661	447.00	447	LC
115223	-9999.25	49.8384	E
115312	120.00	120	LC
115429	-9999.25	160.54	E
120335	0.00	0	LC
120748	-9999.25	50.7496	E
121349	0.00	0	LC
121595	107.00	107	LC
122123	0.00	0	LC
123053	-9999.25	8.65914	E
123336	-9999.25	11.8362	E
123654	-9999.25	236.982	E
123757	-9999.25	183.239	E
124339	-9999.25	218.931	E
124491	-9999.25	205.353	E
124493	-9999.25	189.531	E
124522	-9999.25	178.589	E
124524	-9999.25	187.44	E
124638	-9999.25	252.349	E
125043	65.00	65	LC
125506	-9999.25	20.307	E
125635	-9999.25	24.4051	E
125769	48.00	48	LC
126005	52.00	52	LC
126648	-9999.25	19.0326	E
126649	58.00	58	LC
126650	40.00	40	LC

KGS REC	I3_CLKC	I3_ana	I3_src
126810	64.00	64	LC
127044	31.00	31	LC
127048	30.00	30	LC
127228	-9999.25	300.657	E
127229	-9999.25	305.111	E
127242	51.00	51	LC
127243	42.00	42	LC
127304	-9999.25	333.363	E
128673	-9999.25	211.372	E
128777	-9999.25	269.055	E
129065	-9999.25	247.144	E
129425	-9999.25	255.034	E
129907	-9999.25	321.831	E
129908	-9999.25	322.982	E
129973	-9999.25	332.554	E
130060	-9999.25	327.014	E
130135	-9999.25	141.695	E
131875	30.00	30	LC
132142	-9999.25	266.364	E
132143	-9999.25	267.946	E
132325	74.00	74	LC
132326	103.00	103	LC
132327	82.00	82	LC
132433	311.00	311	LC
133831	-9999.25	25.673	E
134591	95.00	95	LC
134670	202.00	202	LC
135644	30.00	30	LC
135647	76.00	76	LC
136312	-9999.25	106.205	E
136624	-9999.25	48.2046	E
136630	-9999.25	239.194	E
136631	-9999.25	236.46	E
137175	203.00	203	LC
137356	95.00	95	LC
137575	71.00	71	LC
137576	37.00	37	LC
138273	-9999.25	145.689	E
138396	-9999.25	140.039	E
138644	-9999.25	230.911	E
139171	-9999.25	232.689	E

KGS REC	I3_CLKC	I3_ana	I3_src
141283	-9999.25	128.753	E
141285	-9999.25	115.468	E
143084	-9999.25	259.702	E
2000111	-9999.25	4.24953	E
2029993	-9999.25	213.753	E
2030235	0.00	0	LC
2037542	-9999.25	54.3355	E
2037613	-9999.25	26.9631	E
2037770	-9999.25	66.2422	E
2039921	0.00	0	LC
2040109	-9999.25	77.1708	E
2040429	0.00	0	LC
2040433	-9999.25	146.371	E
2040888	-9999.25	184.079	E
2042187	-9999.25	20.7417	E

KGS REC	I4_RSGK	I4_ana	I4_src
1360	0.00	0	LC
1561	0.00	0	LC
1612	0.00	0	LC
1647	0.00	0	LC
1677	0.00	0	LC
2089	0.00	0	LC
2182	0.00	0	LC
2183	0.00	0	LC
2619	36.00	36	LC
2626	52.00	52	LC
2627	79.00	79	LC
2628	78.00	78	LC
2631	56.00	56	LC
8245	-9999.25	5.82793	E
8247	-9999.25	7.25184	E
8249	17.00	17	LC
8254	-9999.25	29.8955	E
8255	-9999.25	29.4518	E
8268	-9999.25	30.1126	E
8288	-9999.25	37.6464	E
8840	-9999.25	35.5725	E
8852	-9999.25	37.276	E
8853	-9999.25	38.5734	E

KGS REC	I4_RSGK	I4_ana	I4_src
8856	-9999.25	42.1089	E
8870	-9999.25	43.5138	E
8884	-9999.25	41.5349	E
8922	-9999.25	32.8595	E
8929	-9999.25	32.7891	E
8931	-9999.25	33.6052	E
8942	-9999.25	36.0819	E
8949	-9999.25	36.0375	E
8950	-9999.25	35.935	E
8966	36.00	36	LC
8970	18.20	18.2	LC
8974	25.00	25	LC
8979	28.00	28	LC
8985	15.00	15	LC
9892	0.00	0	LC
9948	0.00	0	LC
10018	0.00	0	LC
10037	0.00	0	LC
12499	21.00	21	LC
12520	35.00	35	LC
12534	-9999.25	27.5679	E
12535	-9999.25	25.4208	E
12557	-9999.25	24.3954	E
12581	-9999.25	32.4662	E
12585	44.00	44	LC
12588	-9999.25	33.2116	E
12589	-9999.25	33.4958	E
12611	-9999.25	36.9374	E
12623	-9999.25	39.5422	E
12632	25.00	25	LC
12659	-9999.25	35.5904	E
16942	-9999.25	22.9111	E
16946	7.00	7	LC
16951	0.00	0	LC
17423	0.00	0	LC
17428	42.00	42	LC
17448	17.10	17.1	LC
17470	15.00	15	LC
17473	15.00	15	LC
17494	23.00	23	LC
17496	-9999.25	33.6577	E
17550	25.00	25	LC

KGS REC	I4_RSGK	I4_ana	I4_src
17582	-9999.25	6.3744	E
17588	-9999.25	41.5959	E
17592	-9999.25	36.5094	E
17660	38.00	38	LC
17687	26.00	26	LC
18752	-9999.25	61.2201	E
21277	0.00	0	LC
21322	0.00	0	LC
22861	0.00	0	LC
23475	34.00	34	LC
23477	28.00	28	LC
24414	-9999.25	5.8181	E
24513	15.00	15	LC
24518	0.00	0	LC
24520	-9999.25	2.34169	E
24533	26.90	26.9	LC
24862	27.80	27.8	LC
24878	10.10	10.1	LC
24985	-9999.25	17.0859	E
24987	-9999.25	16.995	E
25006	-9999.25	29.0318	E
25007	-9999.25	1.03552	E
25065	-9999.25	0.252551	E
25165	50.00	50	LC
26194	0.00	0	LC
26231	-9999.25	42.1227	E
26540	-9999.25	42.0379	E
26541	-9999.25	41.0089	E
26542	-9999.25	38.4046	E
26543	-9999.25	46.9956	E
26544	-9999.25	48.0472	E
26549	-9999.25	8.75078	E
26609	-9999.25	20.7925	E
26970	-9999.25	32.412	E
27009	-9999.25	40.4842	E
27145	-9999.25	31.4798	E
27146	-9999.25	31.2689	E
27367	34.00	34	LC
27852	-9999.25	11.5224	E
28285	-9999.25	29.7936	E
28442	-9999.25	32.6475	E

KGS REC	I4_RSGK	I4_ana	I4_src
28447	-9999.25	34.7136	E
28458	-9999.25	34.4191	E
28470	-9999.25	25.3307	E
29044	32.00	32	LC
29071	23.00	23	LC
29102	-9999.25	32.7137	E
30067	0.00	0	LC
30090	-9999.25	40.9784	E
30092	-9999.25	25.2825	E
30117	17.00	17	LC
30118	-9999.25	27.6341	E
30483	-9999.25	4.08737	E
30670	-9999.25	35.2892	E
30794	-9999.25	41.476	E
30795	-9999.25	41.9977	E
30824	0.00	0	LC
31005	0.00	0	LC
31018	-9999.25	40.6022	E
31120	-9999.25	1.04055	E
31264	-9999.25	36.6246	E
31394	0.00	0	LC
32126	30.00	30	LC
32468	16.00	16	LC
32641	0.00	0	LC
32959	0.00	0	LC
33057	14.00	14	LC
33896	-9999.25	31.0416	E
34176	17.00	17	LC
34251	-9999.25	32.2801	E
34413	-9999.25	2.3675	E
34743	-9999.25	32.5266	E
35139	-9999.25	27.6628	E
35370	-9999.25	27.1198	E
36020	-9999.25	33.1925	E
36251	-9999.25	39.7106	E
36373	-9999.25	42.1905	E
36411	32.00	32	LC
36701	-9999.25	29.8983	E
37056	14.00	14	LC
37057	8.00	8	LC
37064	0.00	0	LC

KGS REC	I4_RSGK	I4_ana	I4_src
37649	27.00	27	LC
37651	-9999.25	31.8688	E
37710	27.00	27	LC
37719	25.00	25	LC
37826	-9999.25	34.6252	E
38267	26.00	26	LC
38274	20.20	20.2	LC
38322	-9999.25	38.8655	E
38426	0.00	0	LC
38932	-9999.25	35.1313	E
41548	-9999.25	40.2839	E
41592	-9999.25	40.1412	E
41615	-9999.25	29.4525	E
41696	-9999.25	5.5558	E
41697	-9999.25	5.35209	E
41725	15.00	15	LC
41810	17.00	17	LC
41947	-9999.25	3.40307	E
42211	-9999.25	25.3984	E
42252	-9999.25	3.79327	E
42524	-9999.25	4.29385	E
43185	0.00	0	LC
43186	-9999.25	0	E
43551	-9999.25	42.3645	E
43567	-9999.25	41.9983	E
43875	28.00	28	LC
43976	-9999.25	3.17147	E
43985	-9999.25	3.01539	E
44002	0.00	0	LC
44194	29.00	29	LC
44391	6.80	6.8	LC
44511	99.00	99	LC
44554	-9999.25	0	E
44735	-9999.25	31.6809	E
44743	0.00	0	LC
44795	35.00	35	LC
44796	-9999.25	25.5157	E
44820	25.00	25	LC
44831	-9999.25	6.70337	E
44884	-9999.25	28.797	E
44890	-9999.25	28.8579	E

KGS REC	I4_RSGK	I4_ana	I4_src
44938	-9999.25	7.37168	E
44942	-9999.25	7.00242	E
44957	-9999.25	13.2871	E
44962	50.00	50	LC
44964	-9999.25	34.2366	E
44966	-9999.25	5.23134	E
45406	21.00	21	LC
45408	-9999.25	30.2577	E
45607	-9999.25	37.6958	E
45907	-9999.25	25.0769	E
46168	-9999.25	42.8255	E
46193	-9999.25	42.552	E
46768	-9999.25	42.109	E
46770	32.00	32	LC
46810	-9999.25	20.0175	E
47882	0.00	0	LC
47936	-9999.25	43.24	E
48080	-9999.25	80.7596	E
48511	21.00	21	LC
48678	-9999.25	3.54424	E
48712	-9999.25	24.5589	E
48915	-9999.25	34.2525	E
49185	-9999.25	24.6148	E
49529	-9999.25	18.682	E
50331	-9999.25	34.1712	E
50333	30.10	30.1	LC
50439	0.00	0	LC
50832	0.00	0	LC
50878	0.00	0	LC
51143	0.00	0	LC
51478	-9999.25	42.0525	E
51636	-9999.25	28.2059	E
53626	12.00	12	LC
53903	-9999.25	27.4216	E
54301	-9999.25	67.9269	E
54921	-9999.25	10.8361	E
55626	-9999.25	24.182	E
57212	39.00	39	LC
57253	30.00	30	LC
57369	14.50	14.5	LC
57470	-9999.25	30.5274	E

KGS REC	I4_RSGK	I4_ana	I4_src
57726	12.00	12	LC
57764	0.00	0	LC
58703	0.00	0	LC
59328	43.00	43	LC
60392	-9999.25	32.4231	E
60463	-9999.25	1.86041	E
60620	-9999.25	49.3212	E
60647	-9999.25	24.1495	E
60784	-9999.25	62.212	E
61104	-9999.25	10.8422	E
61708	0.00	0	LC
61894	52.60	52.6	LC
61911	0.00	0	LC
64431	0.00	0	LC
64550	-9999.25	38.6592	E
64561	11.00	11	LC
64699	7.30	7.3	LC
65374	-9999.25	38.7464	E
66140	0.00	0	LC
66243	-9999.25	2.57557	E
66398	-9999.25	29.5096	E
66515	-9999.25	32.6393	E
67124	-9999.25	0	E
67275	-9999.25	32.3434	E
68018	-9999.25	33.3213	E
69043	18.00	18	LC
69391	-9999.25	24.5491	E
70030	36.00	36	LC
70521	-9999.25	18.4188	E
70700	34.00	34	LC
71650	-9999.25	34.8616	E
72123	-9999.25	34.9589	E
74160	-9999.25	18.9142	E
75341	0.00	0	LC
75437	-9999.25	33.3586	E
76317	-9999.25	17.402	E
76798	-9999.25	16.5647	E
77043	-9999.25	26.1243	E
77871	-9999.25	17.3249	E
77995	-9999.25	31.5653	E
78566	13.00	13	LC

KGS REC	I4_RSGK	I4_ana	I4_src
78573	-9999.25	35.0089	E
79583	-9999.25	31.0827	E
80622	-9999.25	28.9944	E
80871	14.00	14	LC
81073	-9999.25	14.2511	E
81187	-9999.25	8.13922	E
81188	-9999.25	8.57208	E
81454	-9999.25	24.1998	E
81821	-9999.25	15.1224	E
82547	0.00	0	LC
82646	-9999.25	1.10397	E
82869	-9999.25	32.3772	E
82961	-9999.25	0.261788	E
83200	-9999.25	26.2327	E
83643	-9999.25	27.1635	E
84897	-9999.25	34.5266	E
85857	33.00	33	LC
85898	-9999.25	30.4673	E
86110	0.00	0	LC
86659	-9999.25	21.5189	E
87133	21.00	21	LC
87342	10.00	10	LC
87691	-9999.25	30.3748	E
88126	61.00	61	LC
88310	11.00	11	LC
88519	0.00	0	LC
88720	23.90	23.9	LC
88824	-9999.25	44.1478	E
89627	-9999.25	28.3094	E
89864	-9999.25	47.8231	E
89887	-9999.25	63.0026	E
89889	-9999.25	61.0532	E
90181	-9999.25	22.366	E
91075	-9999.25	56.446	E
92068	0.00	0	LC
92622	-9999.25	3.7777	E
93190	-9999.25	0	E
93217	0.00	0	LC
100378	35.00	35	LC
101078	-9999.25	5.01984	E
101580	-9999.25	2.31061	E

KGS REC	I4_RSGK	I4_ana	I4_src
101593	-9999.25	40.4814	E
101596	-9999.25	16.4888	E
101599	-9999.25	36.0694	E
101654	-9999.25	1.57261	E
101660	-9999.25	2.59728	E
101732	14.60	14.6	LC
101733	-9999.25	26.1345	E
102191	-9999.25	8.26382	E
102215	-9999.25	6.32059	E
102491	-9999.25	36.4993	E
102827	61.00	61	LC
103416	0.00	0	LC
103481	-9999.25	1.35247	E
103599	-9999.25	37.4838	E
104457	0.00	0	LC
104458	0.00	0	LC
104459	-9999.25	7.04123	E
104629	64.00	64	LC
105693	18.00	18	LC
105694	0.00	0	LC
106588	0.00	0	LC
107711	16.00	16	LC
107951	-9999.25	39.6426	E
108682	-9999.25	22.4955	E
108819	21.00	21	LC
109059	26.00	26	LC
109085	14.00	14	LC
109279	39.00	39	LC
109338	-9999.25	19.7084	E
109440	-9999.25	22.1967	E
109472	16.60	16.6	LC
109556	29.00	29	LC
109750	17.00	17	LC
109818	89.00	89	LC
110720	0.00	0	LC
110810	18.00	18	LC
110873	28.00	28	LC
111111	44.00	44	LC
111317	18.40	18.4	LC
111535	32.00	32	LC
111582	15.00	15	LC

KGS REC	I4_RSGK	I4_ana	I4_src
111583	18.00	18	LC
111698	-9999.25	15.9122	E
111711	-9999.25	34.0743	E
111826	18.00	18	LC
111833	20.20	20.2	LC
111866	30.00	30	LC
112219	44.00	44	LC
112229	-9999.25	50.8174	E
112277	-9999.25	18.5182	E
112288	-9999.25	34.3548	E
112435	24.00	24	LC
112764	24.00	24	LC
113002	28.00	28	LC
113076	44.00	44	LC
113543	0.00	0	LC
113949	6.90	6.9	LC
114144	-9999.25	10.9824	E
114292	-9999.25	44.0015	E
114341	-9999.25	5.73755	E
114661	85.00	85	LC
115223	-9999.25	12.1874	E
115312	31.20	31.2	LC
115429	-9999.25	38.0159	E
120335	0.00	0	LC
120748	-9999.25	12.4835	E
121349	0.00	0	LC
121595	32.00	32	LC
122123	0.00	0	LC
123053	-9999.25	0.946539	E
123336	-9999.25	2.64748	E
123654	-9999.25	42.3445	E
123757	-9999.25	39.227	E
124339	-9999.25	43.8398	E
124491	-9999.25	43.077	E
124493	-9999.25	42.1952	E
124522	-9999.25	39.0448	E
124524	-9999.25	41.0867	E
124638	-9999.25	43.0086	E
125043	20.00	20	LC
125506	-9999.25	5.64193	E
125635	-9999.25	6.17836	E

KGS REC	I4_RSGK	I4_ana	I4_src
125769	14.00	14	LC
126005	9.00	9	LC
126648	-9999.25	6.41475	E
126649	-9999.25	12.933	E
126650	-9999.25	13.318	E
126810	-9999.25	3.33098	E
127044	14.00	14	LC
127048	18.00	18	LC
127228	-9999.25	49.1074	E
127229	-9999.25	56.3941	E
127242	17.00	17	LC
127243	-9999.25	10.2791	E
127304	-9999.25	60.683	E
128673	-9999.25	49.8103	E
128777	-9999.25	39.608	E
129065	-9999.25	45.1201	E
129425	-9999.25	58.2791	E
129907	-9999.25	48.5755	E
129908	-9999.25	50.5579	E
129973	-9999.25	50.7701	E
130060	-9999.25	46.7617	E
130135	-9999.25	30.972	E
131875	11.00	11	LC
132142	-9999.25	63.9824	E
132143	-9999.25	65.4195	E
132325	-9999.25	13.3025	E
132326	-9999.25	9.10995	E
132327	23.00	23	LC
132433	126.00	126	LC
133831	-9999.25	6.12289	E
134591	-9999.25	26.1243	E
134670	45.80	45.8	LC
135644	25.00	25	LC
135647	29.00	29	LC
136312	-9999.25	30.5668	E
136624	-9999.25	12.3533	E
136630	-9999.25	57.6979	E
136631	-9999.25	57.2133	E
137175	-9999.25	38.749	E
137356	35.00	35	LC
137575	20.80	20.8	LC

KGS REC	I4_RSGK	I4_ana	I4_src
137576	13.10	13.1	LC
138273	-9999.25	35.1689	E
138396	-9999.25	34.0125	E
138644	-9999.25	49.1181	E
139171	-9999.25	49.556	E
141283	-9999.25	36.7277	E
141285	-9999.25	34.1196	E
143084	-9999.25	61.4604	E
2000111	-9999.25	0.680962	E
2029993	-9999.25	46.783	E
2030235	0.00	0	LC
2037542	-9999.25	16.8737	E
2037613	-9999.25	6.05636	E
2037770	-9999.25	21.0812	E
2039921	0.00	0	LC
2040109	-9999.25	23.163	E
2040429	0.00	0	LC
2040433	-9999.25	35.0755	E
2040888	-9999.25	40.2416	E
2042187	-9999.25	4.39242	E

KGS REC	I5_LDCN	I5_ana	I5_src
1360	0.00	0	LC
1561	0.00	0	LC
1612	0.00	0	LC
1647	0.00	0	LC
1677	0.00	0	LC
2089	0.00	0	LC
2182	0.00	0	LC
2183	0.00	0	LC
2619	266.00	266	LC
2626	246.00	246	LC
2627	496.00	496	LC
2628	458.00	458	LC
2631	372.00	372	LC
8245	-9999.25	30.95113	LC
8247	-9999.25	37.64314	LC
8249	73.00	73	LC
8254	-9999.25	117.753	LC
8255	-9999.25	113.3892	LC

KGS REC	I5_LDCN	I5_ana	I5_src
8268	-9999.25	119.6342	LC
8288	-9999.25	205.2254	LC
8840	-9999.25	190.4355	LC
8852	-9999.25	206.002	LC
8853	-9999.25	217.2484	LC
8856	-9999.25	343.2839	LC
8870	-9999.25	328.1018	LC
8884	-9999.25	274.1849	LC
8922	-9999.25	203.4205	LC
8929	-9999.25	199.1451	LC
8931	-9999.25	201.0082	LC
8942	-9999.25	227.2489	LC
8949	-9999.25	219.5035	LC
8950	-9999.25	214.376	LC
8966	274.00	274	LC
8970	73.20	73.2	LC
8974	468.00	468	LC
8979	393.00	393	LC
8985	147.00	147	LC
9892	0.00	0	LC
9948	0.00	0	LC
10018	0.00	0	LC
10037	0.00	0	LC
12499	81.00	81	LC
12520	138.00	138	LC
12534	-9999.25	106.9441	LC
12535	-9999.25	101.2906	LC
12557	-9999.25	93.2512	LC
12581	93.00	140.9822	LC
12585	113.00	113	LC
12588	-9999.25	135.6746	LC
12589	-9999.25	140.4958	LC
12611	167.00	213.7214	LC
12623	-9999.25	210.7762	LC
12632	205.00	205	LC
12659	-9999.25	156.0464	LC
16942	-9999.25	92.0824	LC
16946	49.00	49	LC
16951	0.00	0	LC
17423	0.00	0	LC
17428	124.00	124	LC
17448	75.10	75.1	LC

KGS REC	I5_LDCN	I5_ana	I5_src
17470	45.00	45	LC
17473	77.00	77	LC
17494	139.00	139	LC
17496	-9999.25	167.3047	LC
17550	89.00	89	LC
17582	-9999.25	34.4209	LC
17588	-9999.25	233.8199	LC
17592	-9999.25	172.6974	LC
17660	112.00	112	LC
17687	82.00	82	LC
18752	-9999.25	309.5141	LC
21277	0.00	0	LC
21322	0.00	0	LC
22861	0.00	0	LC
23475	141.00	141	LC
23477	73.00	73	LC
24414	-9999.25	31.0204	LC
24513	85.00	85	LC
24518	0.00	0	LC
24520	-9999.25	15.12509	LC
24533	142.90	142.9	LC
24862	93.80	93.8	LC
24878	47.10	47.1	LC
24985	-9999.25	93.0859	LC
24987	-9999.25	71.6368	LC
25006	-9999.25	130.9948	LC
25007	-9999.25	11.24662	LC
25065	-9999.25	4.160931	LC
25165	538.00	538	LC
26194	0.00	0	LC
26231	-9999.25	253.8027	LC
26540	-9999.25	218.2689	LC
26541	-9999.25	208.4509	LC
26542	-9999.25	176.5516	LC
26543	-9999.25	341.9216	LC
26544	-9999.25	344.0702	LC
26549	-9999.25	42.80308	LC
26609	-9999.25	119.7925	LC
26970	-9999.25	115.412	LC
27009	-9999.25	251.0862	LC
27145	-9999.25	112.4798	LC

KGS REC	I5_LDCN	I5_ana	I5_src
27146	-9999.25	115.3607	LC
27367	173.00	173	LC
27852	-9999.25	54.483	LC
28285	-9999.25	133.5696	LC
28442	-9999.25	222.8965	LC
28447	-9999.25	219.6296	LC
28458	-9999.25	195.8631	LC
28470	-9999.25	134.9387	LC
29044	154.00	154	LC
29071	128.00	128	LC
29102	-9999.25	137.7137	LC
30067	0.00	0	LC
30090	-9999.25	236.7624	LC
30092	-9999.25	111.2877	LC
30117	76.00	76	LC
30118	-9999.25	95.6341	LC
30483	-9999.25	24.27937	LC
30670	-9999.25	155.1462	LC
30794	-9999.25	274.311	LC
30795	-9999.25	256.5787	LC
30824	0.00	0	LC
31005	0.00	0	LC
31018	-9999.25	238.6702	LC
31120	-9999.25	7.55374	LC
31264	-9999.25	177.7476	LC
31394	0.00	0	LC
32126	90.00	90	LC
32468	109.00	109	LC
32641	0.00	0	LC
32959	0.00	0	LC
33057	67.00	67	LC
33896	-9999.25	146.3566	LC
34176	75.00	75	LC
34251	-9999.25	173.2801	LC
34413	-9999.25	12.6467	LC
34743	-9999.25	131.5266	LC
35139	-9999.25	99.6628	LC
35370	-9999.25	96.1198	LC
36020	-9999.25	129.0721	LC
36251	-9999.25	244.9096	LC
36373	-9999.25	260.5175	LC

KGS REC	I5_LDCN	I5_ana	I5_src
36411	112.00	112	LC
36701	-9999.25	138.8983	LC
37056	52.00	52	LC
37057	32.00	32	LC
37064	0.00	0	LC
37649	87.00	87	LC
37651	-9999.25	122.3175	LC
37710	90.00	90	LC
37719	91.00	91	LC
37826	-9999.25	173.4242	LC
38267	88.00	88	LC
38274	75.20	75.2	LC
38322	-9999.25	237.8405	LC
38426	0.00	0	LC
38932	-9999.25	153.1313	LC
41548	-9999.25	235.1279	LC
41592	-9999.25	232.7512	LC
41615	-9999.25	104.4525	LC
41696	-9999.25	29.3249	LC
41697	-9999.25	28.47059	LC
41725	51.00	51	LC
41810	47.00	47	LC
41947	-9999.25	18.99477	LC
42211	-9999.25	92.1554	LC
42252	-9999.25	19.90267	LC
42524	-9999.25	22.86305	LC
43185	0.00	0	LC
43186	-9999.25	0	LC
43551	-9999.25	256.4975	LC
43567	-9999.25	258.1513	LC
43875	107.00	107	LC
43976	-9999.25	18.86537	LC
43985	-9999.25	19.04349	LC
44002	0.00	0	LC
44194	214.00	214	LC
44391	37.80	37.8	LC
44511	420.00	420	LC
44554	-9999.25	1.63096	LC
44735	-9999.25	118.5698	LC
44743	0.00	0	LC
44795	113.00	113	LC

KGS REC	I5_LDCN	I5_ana	I5_src
44796	-9999.25	94.5157	LC
44820	97.00	97	LC
44831	-9999.25	36.99677	LC
44884	-9999.25	124.797	LC
44890	-9999.25	127.6453	LC
44938	-9999.25	35.60498	LC
44942	-9999.25	34.05612	LC
44957	-9999.25	52.9313	LC
44962	197.00	197	LC
44964	-9999.25	134.6106	LC
44966	-9999.25	26.25614	LC
45406	97.00	97	LC
45408	-9999.25	111.6656	LC
45607	-9999.25	181.5888	LC
45907	-9999.25	113.6133	LC
46168	-9999.25	261.1695	LC
46193	-9999.25	257.17	LC
46768	-9999.25	247.655	LC
46770	103.00	103	LC
46810	-9999.25	84.3522	LC
47882	0.00	0	LC
47936	-9999.25	271.829	LC
48080	-9999.25	360.7596	LC
48511	96.00	96	LC
48678	-9999.25	20.88584	LC
48712	-9999.25	107.8542	LC
48915	-9999.25	135.9355	LC
49185	-9999.25	94.6148	LC
49529	-9999.25	80.0859	LC
50331	-9999.25	134.1712	LC
50333	134.10	134.1	LC
50439	0.00	0	LC
50832	0.00	0	LC
50878	0.00	0	LC
51143	0.00	0	LC
51478	-9999.25	239.3555	LC
51636	-9999.25	120.2059	LC
53626	65.00	65	LC
53903	-9999.25	114.5871	LC
54301	-9999.25	389.1049	LC
54921	-9999.25	68.5783	LC

KGS REC	I5_LDCN	I5_ana	I5_src
55626	-9999.25	96.17	LC
57212	279.00	279	LC
57253	113.00	113	LC
57369	91.50	91.5	LC
57470	-9999.25	134.5274	LC
57726	49.00	49	LC
57764	0.00	0	LC
58703	0.00	0	LC
59328	173.00	173	LC
60392	-9999.25	201.7261	LC
60463	-9999.25	13.11951	LC
60620	-9999.25	280.9062	LC
60647	-9999.25	103.3445	LC
60784	-9999.25	380.331	LC
61104	-9999.25	47.1214	LC
61708	0.00	0	LC
61894	334.60	334.6	LC
61911	0.00	0	LC
64431	0.00	0	LC
64550	-9999.25	181.3802	LC
64561	65.00	65	LC
64699	143.30	143.3	LC
65374	-9999.25	206.9814	LC
66140	0.00	0	LC
66243	-9999.25	16.62967	LC
66398	-9999.25	107.5096	LC
66515	-9999.25	120.5184	LC
67124	-9999.25	1.4655	LC
67275	-9999.25	131.4147	LC
68018	-9999.25	152.5913	LC
69043	72.00	72	LC
69391	-9999.25	85.8787	LC
70030	117.00	117	LC
70521	-9999.25	88.4188	LC
70700	179.00	179	LC
71650	-9999.25	141.4386	LC
72123	-9999.25	142.4719	LC
74160	-9999.25	82.2368	LC
75341	0.00	0	LC
75437	-9999.25	125.3586	LC
76317	-9999.25	66.4784	LC

KGS REC	I5_LDCN	I5_ana	I5_src
76798	-9999.25	64.6493	LC
77043	-9999.25	120.1243	LC
77871	-9999.25	67.6173	LC
77995	-9999.25	141.0563	LC
78566	27.00	27	LC
78573	-9999.25	141.0089	LC
79583	-9999.25	132.0827	LC
80622	-9999.25	120.9944	LC
80871	55.00	55	LC
81073	-9999.25	57.8545	LC
81187	-9999.25	41.96182	LC
81188	-9999.25	42.61718	LC
81454	-9999.25	78.1998	LC
81821	-9999.25	62.8052	LC
82547	0.00	0	LC
82646	-9999.25	8.98263	LC
82869	-9999.25	165.3772	LC
82961	-9999.25	3.696008	LC
83200	-9999.25	95.5841	LC
83643	-9999.25	100.5709	LC
84897	-9999.25	154.5266	LC
85857	106.00	106	LC
85898	-9999.25	112.5929	LC
86110	0.00	0	LC
86659	-9999.25	76.3289	LC
87133	63.00	63	LC
87342	24.00	24	LC
87691	-9999.25	109.5061	LC
88126	332.00	332	LC
88310	61.00	61	LC
88519	0.00	0	LC
88720	184.90	184.9	LC
88824	-9999.25	246.0448	LC
89627	-9999.25	124.1207	LC
89864	-9999.25	270.6591	LC
89887	-9999.25	358.0166	LC
89889	-9999.25	349.0942	LC
90181	-9999.25	79.366	LC
91075	-9999.25	307.104	LC
92068	0.00	0	LC
92622	-9999.25	22.1763	LC

KGS REC	I5_LDCN	I5_ana	I5_src
93190	-9999.25	4.30714	LC
93217	0.00	0	LC
100378	107.00	107	LC
101078	-9999.25	27.75704	LC
101580	-9999.25	14.09831	LC
101593	-9999.25	216.4334	LC
101596	-9999.25	78.9099	LC
101599	-9999.25	192.6354	LC
101654	-9999.25	11.76821	LC
101660	-9999.25	28.07238	LC
101732	47.60	47.6	LC
101733	-9999.25	118.199	LC
102191	-9999.25	39.93222	LC
102215	-9999.25	31.14559	LC
102491	-9999.25	170.4993	LC
102827	304.00	304	LC
103416	0.00	0	LC
103481	-9999.25	10.8403	LC
103599	-9999.25	186.3008	LC
104457	0.00	0	LC
104458	0.00	0	LC
104459	-9999.25	32.14633	LC
104629	314.00	314	LC
105693	88.00	88	LC
105694	0.00	0	LC
106588	0.00	0	LC
107711	208.00	208	LC
107951	-9999.25	197.6426	LC
108682	-9999.25	85.4955	LC
108819	80.00	80	LC
109059	55.00	55	LC
109085	42.00	42	LC
109279	230.00	230	LC
109338	-9999.25	67.7084	LC
109440	-9999.25	82.1967	LC
109472	74.60	74.6	LC
109556	130.00	130	LC
109750	78.00	78	LC
109818	611.00	611	LC
110720	0.00	0	LC
110810	67.00	67	LC

KGS REC	I5_LDCN	I5_ana	I5_src
110873	146.00	146	LC
111111	232.00	232	LC
111317	77.40	77.4	LC
111535	172.00	172	LC
111582	55.00	55	LC
111583	62.00	62	LC
111698	-9999.25	69.6383	LC
111711	-9999.25	156.0743	LC
111826	92.00	92	LC
111833	74.20	74.2	LC
111866	216.00	216	LC
112219	170.00	170	LC
112229	-9999.25	278.5344	LC
112277	-9999.25	77.9139	LC
112288	-9999.25	230.3548	LC
112435	65.00	65	LC
112764	71.00	71	LC
113002	58.00	58	LC
113076	225.00	225	LC
113543	0.00	0	LC
113949	56.90	56.9	LC
114144	-9999.25	60.2755	LC
114292	-9999.25	279.5955	LC
114341	-9999.25	44.43945	LC
114661	532.00	532	LC
115223	-9999.25	62.0258	LC
115312	151.20	151.2	LC
115429	-9999.25	198.5559	LC
120335	0.00	0	LC
120748	-9999.25	63.2331	LC
121349	0.00	0	LC
121595	139.00	139	LC
122123	0.00	0	LC
123053	-9999.25	9.605679	LC
123336	-9999.25	14.48368	LC
123654	-9999.25	279.3265	LC
123757	-9999.25	222.466	LC
124339	-9999.25	262.7708	LC
124491	-9999.25	248.43	LC
124493	-9999.25	231.7262	LC
124522	-9999.25	217.6338	LC

KGS REC	I5_LDCN	I5_ana	I5_src
124524	-9999.25	228.5267	LC
124638	-9999.25	295.3576	LC
125043	85.00	85	LC
125506	-9999.25	25.94893	LC
125635	-9999.25	30.58346	LC
125769	62.00	62	LC
126005	61.00	61	LC
126648	-9999.25	25.44735	LC
126649	-9999.25	70.933	LC
126650	-9999.25	53.318	LC
126810	-9999.25	67.33098	LC
127044	45.00	45	LC
127048	48.00	48	LC
127228	-9999.25	349.7644	LC
127229	-9999.25	361.5051	LC
127242	68.00	68	LC
127243	-9999.25	52.2791	LC
127304	-9999.25	394.046	LC
128673	-9999.25	261.1823	LC
128777	-9999.25	308.663	LC
129065	-9999.25	292.2641	LC
129425	-9999.25	313.3131	LC
129907	-9999.25	370.4065	LC
129908	-9999.25	373.5399	LC
129973	-9999.25	383.3241	LC
130060	-9999.25	373.7757	LC
130135	-9999.25	172.667	LC
131875	41.00	41	LC
132142	-9999.25	330.3464	LC
132143	-9999.25	333.3655	LC
132325	-9999.25	87.3025	LC
132326	-9999.25	112.10995	LC
132327	105.00	105	LC
132433	437.00	437	LC
133831	-9999.25	31.79589	LC
134591	-9999.25	121.1243	LC
134670	247.80	247.8	LC
135644	55.00	55	LC
135647	105.00	105	LC
136312	-9999.25	136.7718	LC
136624	-9999.25	60.5579	LC

KGS REC	I5_LDCN	I5_ana	I5_src
136630	-9999.25	296.8919	LC
136631	-9999.25	293.6733	LC
137175	-9999.25	241.749	LC
137356	130.00	130	LC
137575	91.80	91.8	LC
137576	50.10	50.1	LC
138273	-9999.25	180.8579	LC
138396	-9999.25	174.0515	LC
138644	-9999.25	280.0291	LC
139171	-9999.25	282.245	LC
141283	-9999.25	165.4807	LC
141285	-9999.25	149.5876	LC
143084	-9999.25	321.1624	LC
2000111	-9999.25	4.930492	LC
2029993	-9999.25	260.536	LC
2030235	0.00	0	LC
2037542	-9999.25	71.2092	LC
2037613	-9999.25	33.01946	LC
2037770	-9999.25	87.3234	LC
2039921	0.00	0	LC
2040109	-9999.25	100.3338	LC
2040429	0.00	0	LC
2040433	-9999.25	181.4465	LC
2040888	-9999.25	224.3206	LC
2042187	-9999.25	25.13412	LC

KGS REC	I6_DCN	I6_ana	I6_src
1360	0.00	0	LC
1561	0.00	0	LC
1612	0.00	0	LC
1647	0.00	0	LC
1677	0.00	0	LC
2089	0.00	0	LC
2182	0.00	0	LC
2183	0.00	0	LC
2619	326.00	326	LC
2626	346.00	346	LC
2627	558.00	558	LC
2628	514.00	514	LC

KGS REC	I6_DCN	I6_ana	I6_src
2631	514.00	514	LC
8245	-9999.25	48.71763	LC
8247	-9999.25	58.35014	LC
8249	123.00	123	LC
8254	-9999.25	185.6973	LC
8255	-9999.25	178.6893	LC
8268	-9999.25	187.7443	LC
8288	-9999.25	302.4205	LC
8840	-9999.25	284.6615	LC
8852	-9999.25	301.9969	LC
8853	-9999.25	315.2014	LC
8856	-9999.25	452.1919	LC
8870	-9999.25	443.1778	LC
8884	-9999.25	384.8019	LC
8922	-9999.25	294.1908	LC
8929	-9999.25	289.4381	LC
8931	-9999.25	293.7357	LC
8942	-9999.25	326.8108	LC
8949	-9999.25	315.2988	LC
8950	-9999.25	309.9134	LC
8966	359.20	359.2	LC
8970	123.20	123.2	LC
8974	582.00	582	LC
8979	528.00	528	LC
8985	227.00	227	LC
9892	0.00	0	LC
9948	0.00	0	LC
10018	12.00	12	LC
10037	0.00	0	LC
12499	84.00	84	LC
12520	214.00	214	LC
12534	-9999.25	149.6303	LC
12535	-9999.25	142.7967	LC
12557	-9999.25	132.1378	LC
12581	187.00	234.9822	LC
12585	154.00	154	LC
12588	-9999.25	210.6746	LC
12589	-9999.25	182.4958	LC
12611	305.00	351.7214	LC
12623	-9999.25	287.2125	LC
12632	285.00	285	LC
12659	-9999.25	210.0464	LC

KGS REC	I6_DCN	I6_ana	I6_src
16942	-9999.25	129.3853	LC
16946	112.00	112	LC
16951	0.00	0	LC
17423	0.00	0	LC
17428	175.00	175	LC
17448	113.10	113.1	LC
17470	54.00	54	LC
17473	87.00	87	LC
17494	189.00	189	LC
17496	-9999.25	223.3047	LC
17550	128.20	128.2	LC
17582	-9999.25	52.5477	LC
17588	-9999.25	315.8199	LC
17592	-9999.25	240.8974	LC
17660	164.00	164	LC
17687	128.00	128	LC
18752	-9999.25	395.8565	LC
21277	0.00	0	LC
21322	0.00	0	LC
22861	0.00	0	LC
23475	208.00	208	LC
23477	97.00	97	LC
24414	-9999.25	49.5425	LC
24513	120.30	120.3	LC
24518	0.00	0	LC
24520	-9999.25	19.36615	LC
24533	188.90	188.9	LC
24862	149.80	149.8	LC
24878	71.10	71.1	LC
24985	-9999.25	145.0859	LC
24987	-9999.25	118.1834	LC
25006	-9999.25	180.4474	LC
25007	-9999.25	13.91587	LC
25065	-9999.25	5.319291	LC
25165	656.00	656	LC
26194	0.00	0	LC
26231	-9999.25	361.9187	LC
26540	-9999.25	316.1553	LC
26541	-9999.25	302.7252	LC
26542	-9999.25	260.8165	LC
26543	-9999.25	457.6126	LC

KGS REC	I6_DCN	I6_ana	I6_src
26544	-9999.25	460.1462	LC
26549	-9999.25	65.88748	LC
26609	-9999.25	148.7925	LC
26970	-9999.25	170.412	LC
27009	-9999.25	357.3582	LC
27145	-9999.25	165.4798	LC
27146	-9999.25	175.3873	LC
27367	235.00	235	LC
27852	-9999.25	80.3233	LC
28285	-9999.25	183.5696	LC
28442	-9999.25	314.3989	LC
28447	-9999.25	315.2999	LC
28458	-9999.25	288.5591	LC
28470	-9999.25	203.8004	LC
29044	198.30	198.3	LC
29071	171.00	171	LC
29102	-9999.25	213.7137	LC
30067	0.00	0	LC
30090	-9999.25	339.9734	LC
30092	-9999.25	154.7166	LC
30117	115.00	115	LC
30118	-9999.25	150.6341	LC
30483	-9999.25	34.1534	LC
30670	-9999.25	219.1462	LC
30794	-9999.25	384.325	LC
30795	-9999.25	365.0627	LC
30824	0.00	0	LC
31005	0.00	0	LC
31018	-9999.25	342.5062	LC
31120	-9999.25	14.00335	LC
31264	-9999.25	248.02	LC
31394	0.00	0	LC
32126	131.00	131	LC
32468	147.00	147	LC
32641	0.00	0	LC
32959	0.00	0	LC
33057	88.90	88.9	LC
33896	-9999.25	192.3566	LC
34176	107.00	107	LC
34251	-9999.25	230.2801	LC
34413	-9999.25	19.37853	LC

KGS REC	I6_DCN	I6_ana	I6_src
34743	-9999.25	193.5266	LC
35139	-9999.25	139.6628	LC
35370	-9999.25	144.1198	LC
36020	-9999.25	186.0721	LC
36251	-9999.25	348.9796	LC
36373	-9999.25	369.6765	LC
36411	171.00	171	LC
36701	-9999.25	185.8983	LC
37056	70.00	70	LC
37057	43.00	43	LC
37064	0.00	0	LC
37649	127.00	127	LC
37651	-9999.25	176.3175	LC
37710	133.00	133	LC
37719	134.00	134	LC
37826	-9999.25	243.4242	LC
38267	126.00	126	LC
38274	115.20	115.2	LC
38322	-9999.25	340.3085	LC
38426	0.00	0	LC
38932	-9999.25	217.1313	LC
41548	-9999.25	337.6889	LC
41592	-9999.25	334.6272	LC
41615	-9999.25	158.4525	LC
41696	-9999.25	40.1039	LC
41697	-9999.25	38.68489	LC
41725	80.00	80	LC
41810	61.00	61	LC
41947	-9999.25	25.06614	LC
42211	-9999.25	138.1554	LC
42252	-9999.25	26.23073	LC
42524	-9999.25	30.69203	LC
43185	0.00	0	LC
43186	-9999.25	0	LC
43551	-9999.25	365.1615	LC
43567	-9999.25	367.2843	LC
43875	127.00	127	LC
43976	-9999.25	30.17027	LC
43985	-9999.25	30.96419	LC
44002	0.00	0	LC
44194	270.00	270	LC

KGS REC	I6_DCN	I6_ana	I6_src
44391	83.80	83.8	LC
44511	534.00	534	LC
44554	-9999.25	2.46225	LC
44735	-9999.25	183.5698	LC
44743	0.00	0	LC
44795	159.00	159	LC
44796	-9999.25	134.5157	LC
44820	149.00	149	LC
44831	-9999.25	58.53327	LC
44884	-9999.25	179.797	LC
44890	-9999.25	177.6453	LC
44938	-9999.25	47.91498	LC
44942	-9999.25	45.37672	LC
44957	-9999.25	77.6347	LC
44962	268.00	268	LC
44964	-9999.25	230.6106	LC
44966	-9999.25	34.93542	LC
45406	133.00	133	LC
45408	-9999.25	183.6656	LC
45607	-9999.25	272.5888	LC
45907	-9999.25	161.6133	LC
46168	-9999.25	371.2205	LC
46193	-9999.25	365.761	LC
46768	-9999.25	355.273	LC
46770	142.00	142	LC
46810	-9999.25	118.3522	LC
47882	0.00	0	LC
47936	-9999.25	383.317	LC
48080	-9999.25	505.7596	LC
48511	128.00	128	LC
48678	-9999.25	31.30194	LC
48712	-9999.25	151.3197	LC
48915	-9999.25	196.9355	LC
49185	-9999.25	135.6148	LC
49529	-9999.25	117.0859	LC
50331	-9999.25	194.1712	LC
50333	195.10	195.1	LC
50439	0.00	0	LC
50832	0.00	0	LC
50878	0.00	0	LC
51143	0.00	0	LC

KGS REC	I6_DCN	I6_ana	I6_src
51478	-9999.25	345.6685	LC
51636	-9999.25	160.2059	LC
53626	89.00	89	LC
53903	-9999.25	157.5871	LC
54301	-9999.25	486.4791	LC
54921	-9999.25	111.8347	LC
55626	-9999.25	138.17	LC
57212	427.00	427	LC
57253	178.00	178	LC
57369	126.50	126.5	LC
57470	-9999.25	194.5274	LC
57726	74.00	74	LC
57764	0.00	0	LC
58703	0.00	0	LC
59328	298.00	298	LC
60392	-9999.25	290.8472	LC
60463	-9999.25	25.92601	LC
60620	-9999.25	369.4216	LC
60647	-9999.25	145.3445	LC
60784	-9999.25	496.863	LC
61104	-9999.25	64.5316	LC
61708	0.00	0	LC
61894	432.60	432.6	LC
61911	0.00	0	LC
64431	0.00	0	LC
64550	-9999.25	263.294	LC
64561	102.00	102	LC
64699	210.30	210.3	LC
65374	-9999.25	283.9814	LC
66140	0.00	0	LC
66243	-9999.25	21.88619	LC
66398	-9999.25	152.5096	LC
66515	-9999.25	223.5184	LC
67124	-9999.25	1.4655	LC
67275	-9999.25	180.4147	LC
68018	-9999.25	218.5913	LC
69043	123.00	123	LC
69391	-9999.25	139.8787	LC
70030	162.00	162	LC
70521	-9999.25	131.4188	LC
70700	225.00	225	LC

KGS REC	I6_DCN	I6_ana	I6_src
71650	-9999.25	203.4386	LC
72123	-9999.25	236.4719	LC
74160	-9999.25	105.2368	LC
75341	0.00	0	LC
75437	-9999.25	184.3586	LC
76317	-9999.25	101.5899	LC
76798	-9999.25	100.1747	LC
77043	-9999.25	160.1243	LC
77871	-9999.25	97.0649	LC
77995	-9999.25	194.0563	LC
78566	44.00	44	LC
78573	-9999.25	200.0089	LC
79583	-9999.25	179.0827	LC
80622	-9999.25	162.9944	LC
80871	92.10	92.1	LC
81073	-9999.25	92.2092	LC
81187	-9999.25	60.22672	LC
81188	-9999.25	62.11548	LC
81454	-9999.25	119.1998	LC
81821	-9999.25	100.7776	LC
82547	0.00	0	LC
82646	-9999.25	12.54348	LC
82869	-9999.25	211.3772	LC
82961	-9999.25	6.853128	LC
83200	-9999.25	147.5841	LC
83643	-9999.25	157.5709	LC
84897	-9999.25	214.5266	LC
85857	147.00	147	LC
85898	-9999.25	182.5929	LC
86110	0.00	0	LC
86659	-9999.25	114.6654	LC
87133	101.00	101	LC
87342	46.00	46	LC
87691	-9999.25	181.5061	LC
88126	445.00	445	LC
88310	86.00	86	LC
88519	0.00	0	LC
88720	272.90	272.9	LC
88824	-9999.25	318.0448	LC
89627	-9999.25	171.5464	LC
89864	-9999.25	361.6591	LC

KGS REC	I6_DCN	I6_ana	I6_src
89887	-9999.25	729.0166	LC
89889	-9999.25	743.0942	LC
90181	-9999.25	129.366	LC
91075	-9999.25	406.1089	LC
92068	0.00	0	LC
92622	-9999.25	30.56964	LC
93190	-9999.25	4.556599	LC
93217	0.00	0	LC
100378	182.00	182	LC
101078	-9999.25	38.48014	LC
101580	-9999.25	22.95934	LC
101593	-9999.25	317.4334	LC
101596	-9999.25	137.9099	LC
101599	-9999.25	289.1438	LC
101654	-9999.25	15.42647	LC
101660	-9999.25	53.24298	LC
101732	59.60	59.6	LC
101733	-9999.25	182.199	LC
102191	-9999.25	56.12012	LC
102215	-9999.25	42.75719	LC
102491	-9999.25	239.4993	LC
102827	409.00	409	LC
103416	0.00	0	LC
103481	-9999.25	17.67968	LC
103599	-9999.25	254.3008	LC
104457	0.00	0	LC
104458	0.00	0	LC
104459	-9999.25	53.16383	LC
104629	416.00	416	LC
105693	116.00	116	LC
105694	0.00	0	LC
106588	0.00	0	LC
107711	305.00	305	LC
107951	-9999.25	293.6426	LC
108682	-9999.25	135.4955	LC
108819	131.00	131	LC
109059	105.00	105	LC
109085	88.00	88	LC
109279	293.00	293	LC
109338	-9999.25	119.7084	LC
109440	-9999.25	132.1967	LC

KGS REC	I6_DCN	I6_ana	I6_src
109472	125.60	125.6	LC
109556	193.00	193	LC
109750	134.00	134	LC
109818	789.00	789	LC
110720	0.00	0	LC
110810	116.00	116	LC
110873	198.00	198	LC
111111	310.00	310	LC
111317	146.40	146.4	LC
111535	212.00	212	LC
111582	112.00	112	LC
111583	116.00	116	LC
111698	-9999.25	116.1361	LC
111711	-9999.25	216.0743	LC
111826	142.00	142	LC
111833	137.20	137.2	LC
111866	273.00	273	LC
112219	238.00	238	LC
112229	-9999.25	368.3447	LC
112277	-9999.25	141.9139	LC
112288	-9999.25	312.3548	LC
112435	86.00	86	LC
112764	114.00	114	LC
113002	77.90	77.9	LC
113076	288.00	288	LC
113543	0.00	0	LC
113949	104.90	104.9	LC
114144	-9999.25	130.2755	LC
114292	-9999.25	393.0835	LC
114341	-9999.25	73.95675	LC
114661	668.00	668	LC
115223	-9999.25	92.0258	LC
115312	233.20	233.2	LC
115429	-9999.25	311.5559	LC
120335	0.00	0	LC
120748	-9999.25	108.2331	LC
121349	0.00	0	LC
121595	226.00	226	LC
122123	0.00	0	LC
123053	-9999.25	14.837169	LC
123336	-9999.25	25.05948	LC

KGS REC	I6_DCN	I6_ana	I6_src
123654	-9999.25	391.8425	LC
123757	-9999.25	325.335	LC
124339	-9999.25	372.8528	LC
124491	-9999.25	356.279	LC
124493	-9999.25	335.3562	LC
124522	-9999.25	317.4518	LC
124524	-9999.25	333.7027	LC
124638	-9999.25	409.1596	LC
125043	114.00	114	LC
125506	-9999.25	73.94893	LC
125635	-9999.25	51.77266	LC
125769	87.00	87	LC
126005	89.00	89	LC
126648	-9999.25	44.21655	LC
126649	-9999.25	112.933	LC
126650	-9999.25	97.318	LC
126810	-9999.25	98.33098	LC
127044	81.00	81	LC
127048	68.00	68	LC
127228	-9999.25	465.7954	LC
127229	-9999.25	478.8961	LC
127242	99.00	99	LC
127243	-9999.25	86.2791	LC
127304	-9999.25	504.976	LC
128673	-9999.25	359.1823	LC
128777	-9999.25	419.686	LC
129065	-9999.25	406.7421	LC
129425	-9999.25	382.3131	LC
129907	-9999.25	478.8935	LC
129908	-9999.25	485.1009	LC
129973	-9999.25	488.6801	LC
130060	-9999.25	475.7287	LC
130135	-9999.25	256.665	LC
131875	61.00	61	LC
132142	-9999.25	424.3464	LC
132143	-9999.25	382.3655	LC
132325	-9999.25	123.3025	LC
132326	-9999.25	151.10995	LC
132327	144.00	144	LC
132433	546.00	546	LC
133831	-9999.25	43.72659	LC

KGS REC	I6_DCN	I6_ana	I6_src
134591	-9999.25	161.1243	LC
134670	336.80	336.8	LC
135644	90.00	90	LC
135647	156.00	156	LC
136312	-9999.25	182.7718	LC
136624	-9999.25	85.083	LC
136630	-9999.25	413.8919	LC
136631	-9999.25	350.6733	LC
137175	-9999.25	332.749	LC
137356	185.00	185	LC
137575	123.80	123.8	LC
137576	67.10	67.1	LC
138273	-9999.25	245.7551	LC
138396	-9999.25	230.0515	LC
138644	-9999.25	377.4351	LC
139171	-9999.25	380.1629	LC
141283	-9999.25	245.4807	LC
141285	-9999.25	206.5876	LC
143084	-9999.25	433.1624	LC
2000111	-9999.25	10.236762	LC
2029993	-9999.25	363.536	LC
2030235	0.00	0	LC
2037542	-9999.25	103.517	LC
2037613	-9999.25	56.40686	LC
2037770	-9999.25	122.0917	LC
2039921	0.00	0	LC
2040109	-9999.25	140.8791	LC
2040429	0.00	0	LC
2040433	-9999.25	240.4465	LC
2040888	-9999.25	325.3206	LC
2042187	-9999.25	35.43872	LC

KGS REC	I7_SCN	I7_ana	I7_src
1360	189.00	189	LC
1561	147.00	147	LC
1612	-9999.25	180.899	E
1647	195.00	195	LC
1677	192.00	192	LC
2089	107.00	107	LC

KGS REC	I7_SCN	I7_ana	I7_src
2182	115.00	115	LC
2183	151.00	151	LC
2619	286.00	286	LC
2626	304.00	304	LC
2627	366.00	366	LC
2628	-9999.25	335.826	E
2631	347.00	347	LC
8245	-9999.25	214.116	E
8247	-9999.25	219.46	E
8249	259.00	259	LC
8254	-9999.25	277.318	E
8255	-9999.25	271.392	E
8268	-9999.25	279.181	E
8288	-9999.25	300.757	E
8840	-9999.25	300.851	E
8852	-9999.25	299.886	E
8853	-9999.25	300.876	E
8856	-9999.25	278.113	E
8870	-9999.25	288.3	E
8884	-9999.25	297.774	E
8922	-9999.25	288.828	E
8929	-9999.25	289.797	E
8931	-9999.25	293.665	E
8942	-9999.25	293.051	E
8949	-9999.25	296.551	E
8950	-9999.25	297.942	E
8966	304.00	304	LC
8970	-9999.25	239.981	E
8974	150.00	150	LC
8979	313.00	313	LC
8985	155.00	155	LC
9892	132.00	132	LC
9948	-9999.25	186.079	E
10018	230.00	230	LC
10037	60.00	60	LC
12499	189.00	189	LC
12520	238.00	238	LC
12534	-9999.25	208.684	E
12535	-9999.25	205.662	E
12557	-9999.25	199.397	E
12581	-9999.25	244.881	E
12585	-9999.25	229.263	E
12588	-9999.25	236.281	E

KGS REC	I7_SCN	I7_ana	I7_src
12589	-9999.25	238.265	E
12611	-9999.25	280.399	E
12623	-9999.25	290.039	E
12632	311.00	311	LC
12659	-9999.25	256.904	E
16942	-9999.25	202.746	E
16946	156.00	156	LC
16951	-9999.25	185.656	E
17423	19.70	19.7	LC
17428	251.00	251	LC
17448	-9999.25	219.002	E
17470	194.00	194	LC
17473	176.00	176	LC
17494	-9999.25	268.573	E
17496	-9999.25	265.277	E
17550	-9999.25	233.153	E
17582	-9999.25	218.423	E
17588	-9999.25	294.97	E
17592	-9999.25	275.152	E
17660	-9999.25	249.12	E
17687	240.00	240	LC
18752	-9999.25	262.953	E
21277	-9999.25	161.714	E
21322	-9999.25	151.965	E
22861	237.70	237.7	LC
23475	-9999.25	241.427	E
23477	184.00	184	LC
24414	-9999.25	185.986	E
24513	-9999.25	211.674	E
24518	168.50	168.5	LC
24520	-9999.25	180.397	E
24533	-9999.25	255.999	E
24862	-9999.25	245.682	E
24878	189.90	189.9	LC
24985	-9999.25	240.413	E
24987	-9999.25	237.999	E
25006	-9999.25	241.737	E
25007	-9999.25	186.26	E
25065	-9999.25	156.783	E
25165	-9999.25	295.261	E
26194	222.00	222	LC

KGS REC	I7_SCN	I7_ana	I7_src
26231	-9999.25	302.148	E
26540	-9999.25	295.243	E
26541	-9999.25	292.629	E
26542	-9999.25	282.847	E
26543	-9999.25	296.021	E
26544	-9999.25	298.14	E
26549	-9999.25	220.841	E
26609	-9999.25	219.287	E
26970	-9999.25	254.394	E
27009	-9999.25	300.095	E
27145	-9999.25	249.948	E
27146	-9999.25	255.289	E
27367	-9999.25	260.766	E
27852	-9999.25	193.675	E
28285	-9999.25	247.263	E
28442	-9999.25	271.716	E
28447	-9999.25	289.582	E
28458	-9999.25	297.057	E
28470	-9999.25	268.187	E
29044	-9999.25	241.478	E
29071	-9999.25	241.534	E
29102	-9999.25	262.165	E
30067	236.40	236.4	LC
30090	-9999.25	303.34	E
30092	-9999.25	227.601	E
30117	-9999.25	221.825	E
30118	-9999.25	217.501	E
30483	-9999.25	206.799	E
30670	-9999.25	267.05	E
30794	-9999.25	296.516	E
30795	-9999.25	301.489	E
30824	18.00	18	LC
31005	169.00	169	LC
31018	-9999.25	303.76	E
31120	-9999.25	164.008	E
31264	-9999.25	277.971	E
31394	177.00	177	LC
32126	236.00	236	LC
32468	-9999.25	218.668	E
32641	168.30	168.3	LC
32959	135.00	135	LC

KGS REC	I7_SCN	I7_ana	I7_src
33057	194.00	194	LC
33896	-9999.25	250.493	E
34176	-9999.25	237.018	E
34251	-9999.25	257.992	E
34413	-9999.25	178.76	E
34743	-9999.25	256.926	E
35139	-9999.25	236.788	E
35370	-9999.25	242.964	E
36020	-9999.25	257.836	E
36251	-9999.25	300.742	E
36373	-9999.25	301.166	E
36411	270.00	270	LC
36701	-9999.25	247.67	E
37056	-9999.25	193.378	E
37057	202.00	202	LC
37064	263.90	263.9	LC
37649	-9999.25	228.233	E
37651	-9999.25	250.144	E
37710	-9999.25	240.36	E
37719	-9999.25	239.083	E
37826	-9999.25	271.142	E
38267	-9999.25	228.812	E
38274	240.80	240.8	LC
38322	-9999.25	301.465	E
38426	63.00	63	LC
38932	-9999.25	266.55	E
41548	-9999.25	301.867	E
41592	-9999.25	302.362	E
41615	-9999.25	253.413	E
41696	-9999.25	195.677	E
41697	-9999.25	196.509	E
41725	-9999.25	197.897	E
41810	214.00	214	LC
41947	-9999.25	187.882	E
42211	-9999.25	246.862	E
42252	-9999.25	187.566	E
42524	-9999.25	192.576	E
43185	-9999.25	133.258	E
43186	-9999.25	134.115	E
43551	-9999.25	303.149	E
43567	-9999.25	301.494	E

KGS REC	I7_SCN	I7_ana	I7_src
43875	-9999.25	215.145	E
43976	-9999.25	206.246	E
43985	-9999.25	186.159	E
44002	97.00	97	LC
44194	350.00	350	LC
44391	254.20	254.2	LC
44511	-9999.25	335.423	E
44554	-9999.25	143.207	E
44735	-9999.25	257.227	E
44743	137.00	137	LC
44795	239.00	239	LC
44796	-9999.25	229.87	E
44820	-9999.25	253.147	E
44831	-9999.25	185.842	E
44884	-9999.25	240.735	E
44890	-9999.25	243.54	E
44938	-9999.25	199.761	E
44942	-9999.25	198.243	E
44957	-9999.25	214.561	E
44962	-9999.25	279.677	E
44964	-9999.25	266.602	E
44966	-9999.25	192.16	E
45406	-9999.25	224.37	E
45408	-9999.25	247.041	E
45607	-9999.25	280.072	E
45907	-9999.25	233.666	E
46168	-9999.25	302.624	E
46193	-9999.25	302.311	E
46768	-9999.25	302.46	E
46770	-9999.25	228.781	E
46810	-9999.25	216.848	E
47882	85.00	85	LC
47936	-9999.25	302.005	E
48080	-9999.25	314.132	E
48511	-9999.25	225.654	E
48678	-9999.25	206.853	E
48712	-9999.25	231.466	E
48915	-9999.25	264.301	E
49185	-9999.25	230.123	E
49529	-9999.25	213.405	E
50331	-9999.25	262.372	E

KGS REC	I7_SCN	I7_ana	I7_src
50333	249.90	249.9	LC
50439	191.00	191	LC
50832	143.00	143	LC
50878	94.00	94	LC
51143	50.00	50	LC
51478	-9999.25	304.471	E
51636	-9999.25	239.194	E
53626	-9999.25	206.898	E
53903	-9999.25	237.336	E
54301	-9999.25	314.956	E
54921	-9999.25	221.891	E
55626	-9999.25	226.927	E
57212	-9999.25	281.578	E
57253	235.00	235	LC
57369	313.50	313.5	LC
57470	-9999.25	246.636	E
57726	254.00	254	LC
57764	193.80	193.8	LC
58703	101.00	101	LC
59328	238.00	238	LC
60392	-9999.25	282.35	E
60463	-9999.25	175.881	E
60620	-9999.25	300.522	E
60647	-9999.25	228.929	E
60784	-9999.25	325.233	E
61104	-9999.25	205.921	E
61708	115.10	115.1	LC
61894	279.40	279.4	LC
61911	74.00	74	LC
64431	215.90	215.9	LC
64550	-9999.25	283.381	E
64561	150.00	150	LC
64699	-9999.25	265.282	E
65374	-9999.25	286.051	E
66140	122.00	122	LC
66243	-9999.25	196.896	E
66398	-9999.25	244.419	E
66515	-9999.25	261.653	E
67124	-9999.25	136.514	E
67275	-9999.25	252.805	E
68018	-9999.25	262.072	E

KGS REC	I7_SCN	I7_ana	I7_src
69043	-9999.25	243.97	E
69391	-9999.25	238.802	E
70030	-9999.25	242.925	E
70521	-9999.25	210.643	E
70700	-9999.25	249.773	E
71650	-9999.25	266.934	E
72123	-9999.25	269.639	E
74160	-9999.25	212.893	E
75341	183.00	183	LC
75437	-9999.25	259.605	E
76317	-9999.25	222.526	E
76798	-9999.25	223.837	E
77043	-9999.25	234.886	E
77871	-9999.25	217.694	E
77995	-9999.25	255.461	E
78566	234.00	234	LC
78573	-9999.25	274.893	E
79583	-9999.25	254.814	E
80622	-9999.25	243.712	E
80871	224.00	224	LC
81073	-9999.25	222.843	E
81187	-9999.25	207.787	E
81188	-9999.25	209.185	E
81454	-9999.25	235.723	E
81821	-9999.25	227.101	E
82547	70.00	70	LC
82646	-9999.25	168.438	E
82869	-9999.25	253.913	E
82961	-9999.25	128.817	E
83200	-9999.25	253.028	E
83643	-9999.25	254.455	E
84897	-9999.25	267.354	E
85857	-9999.25	235.35	E
85898	-9999.25	258.589	E
86110	47.00	47	LC
86659	-9999.25	229.828	E
87133	-9999.25	227.695	E
87342	-9999.25	173.23	E
87691	-9999.25	254.898	E
88126	335.00	335	LC
88310	-9999.25	180.846	E

KGS REC	I7_SCN	I7_ana	I7_src
88519	192.80	192.8	LC
88720	-9999.25	289.852	E
88824	-9999.25	302.176	E
89627	-9999.25	242.76	E
89864	-9999.25	303.836	E
89887	-9999.25	332.997	E
89889	-9999.25	331.408	E
90181	-9999.25	242.631	E
91075	-9999.25	322.104	E
92068	192.00	192	LC
92622	-9999.25	196.435	E
93190	-9999.25	170.771	E
93217	202.00	202	LC
100378	242.00	242	LC
101078	-9999.25	195.775	E
101580	-9999.25	174.756	E
101593	-9999.25	301.297	E
101596	-9999.25	250	E
101599	-9999.25	301.782	E
101654	-9999.25	180.414	E
101660	-9999.25	138.1	E
101732	-9999.25	205.446	E
101733	-9999.25	238.125	E
102191	-9999.25	205.104	E
102215	-9999.25	195.987	E
102491	-9999.25	279.175	E
102827	331.00	331	LC
103416	241.00	241	LC
103481	-9999.25	165.619	E
103599	-9999.25	277.813	E
104457	266.00	266	LC
104458	246.00	246	LC
104459	-9999.25	216.645	E
104629	332.00	332	LC
105693	224.00	224	LC
105694	198.00	198	LC
106588	52.00	52	LC
107711	-9999.25	222.681	E
107951	-9999.25	290.037	E
108682	-9999.25	246.015	E
108819	-9999.25	241.91	E

KGS REC	I7_SCN	I7_ana	I7_src
109059	200.00	200	LC
109085	-9999.25	233.648	E
109279	-9999.25	292.139	E
109338	-9999.25	243.878	E
109440	-9999.25	247.442	E
109472	-9999.25	247.442	E
109556	-9999.25	264.725	E
109750	285.00	285	LC
109818	-9999.25	252.466	E
110720	208.00	208	LC
110810	-9999.25	241.715	E
110873	202.00	202	LC
111111	-9999.25	300.907	E
111317	-9999.25	253.876	E
111535	-9999.25	251.036	E
111582	-9999.25	245.078	E
111583	-9999.25	244.412	E
111698	-9999.25	239.31	E
111711	-9999.25	254.582	E
111826	-9999.25	231.372	E
111833	-9999.25	247.837	E
111866	-9999.25	281.77	E
112219	260.00	260	LC
112229	-9999.25	312.063	E
112277	-9999.25	248.173	E
112288	-9999.25	275.201	E
112435	220.00	220	LC
112764	201.00	201	LC
113002	220.00	220	LC
113076	-9999.25	292.965	E
113543	195.00	195	LC
113949	-9999.25	240.788	E
114144	-9999.25	230.981	E
114292	-9999.25	301.156	E
114341	-9999.25	200.847	E
114661	387.00	387	LC
115223	-9999.25	235.688	E
115312	307.80	307.8	LC
115429	-9999.25	285.684	E
120335	122.00	122	LC
120748	-9999.25	233.169	E

KGS REC	I7_SCN	I7_ana	I7_src
121349	101.90	101.9	LC
121595	290.00	290	LC
122123	149.00	149	LC
123053	-9999.25	150.002	E
123336	-9999.25	180.924	E
123654	-9999.25	299.572	E
123757	-9999.25	303.306	E
124339	-9999.25	302.593	E
124491	-9999.25	301.811	E
124493	-9999.25	300.775	E
124522	-9999.25	302.02	E
124524	-9999.25	303.81	E
124638	-9999.25	297.801	E
125043	218.00	218	LC
125506	-9999.25	210.21	E
125635	-9999.25	217.108	E
125769	-9999.25	223.262	E
126005	-9999.25	227.246	E
126648	-9999.25	212.15	E
126649	-9999.25	232.405	E
126650	-9999.25	230.236	E
126810	-9999.25	197.058	E
127044	-9999.25	222.564	E
127048	-9999.25	214.855	E
127228	-9999.25	299.512	E
127229	-9999.25	314.919	E
127242	-9999.25	208.467	E
127243	-9999.25	225.88	E
127304	-9999.25	319.091	E
128673	-9999.25	247.807	E
128777	-9999.25	279.131	E
129065	-9999.25	302.73	E
129425	-9999.25	275.094	E
129907	-9999.25	292.55	E
129908	-9999.25	298.29	E
129973	-9999.25	297.629	E
130060	-9999.25	285.608	E
130135	-9999.25	288.626	E
131875	191.00	191	LC
132142	-9999.25	293.071	E
132143	-9999.25	292.642	E

KGS REC	I7_SCN	I7_ana	I7_src
132325	-9999.25	227.396	E
132326	-9999.25	221.753	E
132327	-9999.25	221.792	E
132433	283.00	283	LC
133831	-9999.25	198.774	E
134591	-9999.25	234.886	E
134670	-9999.25	294.588	E
135644	-9999.25	221.726	E
135647	-9999.25	239.652	E
136312	-9999.25	250.576	E
136624	-9999.25	207.94	E
136630	-9999.25	255.783	E
136631	-9999.25	257.214	E
137175	-9999.25	288.934	E
137356	-9999.25	256.364	E
137575	-9999.25	204.858	E
137576	-9999.25	204.128	E
138273	-9999.25	274.439	E
138396	-9999.25	270.447	E
138644	-9999.25	313.763	E
139171	-9999.25	314.448	E
141283	-9999.25	276.327	E
141285	-9999.25	266.084	E
143084	-9999.25	286.076	E
2000111	-9999.25	134.361	E
2029993	-9999.25	264.804	E
2030235	3.00	3	LC
2037542	-9999.25	184.676	E
2037613	-9999.25	175.792	E
2037770	-9999.25	202.879	E
2039921	-9999.25	180.505	E
2040109	-9999.25	227.426	E
2040429	-9999.25	181.599	E
2040433	-9999.25	273.701	E
2040888	-9999.25	293.118	E
2042187	-9999.25	209.019	E

**Note: The following Maps are large format and are included as additional appendices:**

**Appendix V: Cross Section Index Map**

**Appendix VI: Cross Section West to East A-A'**

**Appendix VII: Cross Section West to East B-B'**

**Appendix VIII: Cross Section West to East C-C'**

**Appendix IX: Cross Section North to South 1-1'**

**Appendix X: Cross Section North to South 2-2'**

**Appendix XI: Cross Section North to South 3-3'**

**Appendix XII: Cross Section Northwest to Southeast Truncation**

