NORTH HILL CREEK PROJECT

3-D SEISMIC SURVEY

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SEPTEMBER 2002

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EXECUTIVE SUMMARY

Wind River Resources Corporation entered into an Exploration and Development Agreement and an Option Agreement with the Ute Indian Tribe of the Uintah and Ouray Reservation to cover the exploration of approximately thirty-one square miles of Tribal minerals for oil and gas. Wind River also obtained oil and gas leases from the State of Utah covering two additional square miles contiguous with the Tribal lands. These lands are located immediately to the south of the Flat Rock Field, largely in T15S-R20E. The structure on which the Flat Rock Field is developed appeared to cross onto some of the acreage covered by Wind River's agreements with the Ute Indian Tribe.

In October of 1999, Wind River Resources, with the Ute Indian Tribe as partner, applied to the Department of Energy for a grant in the amount of $500,000 to be used toward the cost of a 3-D seismic survey to explore for oil and natural gas liquids on Tribal mineral lands. In May of 2000, Wind River was notified that its proposal had been selected for funding. Negotiations for the grant contract and work in support of a categorical exclusion from the requirements of NEPA for the conduct of the seismic survey were concluded during the summer of 2000. The contract was awarded and field work in support of the survey commenced in September of 2000. Field acquisition of the 3-D seismic data began in early October of 2000 and was completed during the first week of December. Data processing and initial interpretation were completed on May 30, 2001.

The DOE-supported 3-D seismic survey covers approximately 15 square miles of Tribal minerals. The survey delineated the exact size, shape, orientation, structure and stratigraphy of the suspected Hill Creek Anticline. The Flat Rock Field is located on the north flank of this structure.

THE NORTH HILL CREEK PROJECT: UINTAH & OURAY RESERVATION

INTRODUCTION

The Hill Creek Extension of the Uintah and Ouray Indian Reservation(Figure 1) is a mix of Ute Indian Tribe, state and federal minerals, all beneath Tribal surface. Mineral exploration and development have been sparse in this area, especially in comparison to acreage to the north and east.

The Flat Rock Field is located on Ute Indian Tribe surface over state or federal minerals. Like many of the gas fields in this part of the Uinta Basin, it is located on an anticlinal structure associated with the Garmesa Fault Zone and the northwest plunging nose of the Uncompahgre Uplift (Figure 2). Flat Rock appears to be unique, however, as the only such field that has shown promise for significant oil production in addition to natural gas.

In the fall of 1999, Wind River Resources and the Ute Indian Tribe made a joint application for a grant from the U.S. Department of Energy's National Petroleum Technology Office, which had requested proposals for a program called "Applications of Petroleum Technologies on Non-Allotted Native American and Alaskan Native Corporation Lands". The Business Committee (elected governing body) of the Ute Tribe agreed to be a partner in a project that would apply 3-D seismic exploration methods to a prospective area within the Tribe's vast mineral-rich reservation. The Program Solicitation for the grant program specifically stated that, "This program is directed toward technologies applied to the recovery of the estimated 890 million barrels of oil and natural gas liquids on Native American and Alaskan Native Corporation lands."

Although the Uintah & Ouray Reservation has a long history of both oil and gas production, only a small portion has come from the Hill Creek Extension. The developed areas off the reservation to the north, east and southeast of the Flat Rock Field produce gas with minor amounts of oil. Cumulative oil production from Flat Rock Field itself is negligible, but several of the early wells in the field had oil potential far in excess of any of the other wells in the area. The Phillips Petroleum discovery well produced 609 bopd on test in 1962.

Despite the age of the Flat Rock Field, recent drilling there by another operator is the first real effort to develop the field by applying modern drilling and completion practices. This effort includes attempts to evaluate and complete formations and sands that have never produced from wells in the immediate vicinity of Flat Rock. With six new wells drilled and three old wells re-entered, this effort is sufficiently advanced to draw some tentative conclusions. First, the structure at Flat Rock is larger, probably much larger, than the existing field. Second, there appears to be closure on this structure with the crest located slightly to the south of the active area. Third, the field is capable of both oil

and gas production. And finally, there are multiple prospective pays from the Wasatch Formation to the Morrison Formation.

Encouraged by the anomalous oil production, and recognizing that the Tribe owns a large block of land immediately on trend with the Hill Creek Anticline, Wind River Resources and the Ute Indian Tribe settled on an area in and around Township 15 South-Range 20 East as the North Hill Creek Project site. The Tribe and Wind River then entered into an Exploration and Development Agreement and an Option Agreement covering this area.

History

The first commercial hydrocarbon production in the Uinta Basin was natural gas from lenticular sandstones in the Morrison Formation at Ashley Valley Field in 1925 (Burchell, 1964). This gas was piped to Vernal and used for domestic purposes until 1941, at which time the pipeline and other equipment were salvaged for the war effort. In 1948, deeper drilling in the abandoned Ashley Valley gas field found oil in the Park City and Weber Sandstone formations. This was the first commercial oil production for both the Uinta Basin and the state of Utah. Ashley Valley Field produced more than 20 MMbo from twenty-six wells through 1999.

Commercially viable oil and gas in the Uinta Basin prompted the major oil companies to take an interest in exploring the area starting in the late 1940s. Soon, oil and gas in Tertiary reservoirs was discovered in the Gusher and Roosevelt fields (1949), at Red Wash (1951), at Natural Buttes (1952 & 1955) and at Peters Point (1953).

There was no access to outside markets for gas from the Uinta Basin until late 1961 due to a complete lack of pipeline infrastructure (Folsom, 1963). Early exploration efforts were, therefore, aimed at oil. Regardless of the intended target, gas was encountered in many wells. Numerous potentially commercial gas wells were drilled and abandoned in the 1950s, as the lack of transportation made the recovery of completion costs highly speculative. In addition, the period from 1955 to 1960 was one of significant weakness for the domestic oil industry. Particularly in its more remote southern areas, the oil and gas map of the Uinta Basin is littered with dry hole symbols for wells that would certainly have been completed as gas producers had a pipeline been available.

Beginning in 1960, an upturn in exploration activity stimulated development of the previously discovered fields. At the same time, and as a direct consequence of the November 1961 commissioning of the Mountain Fuel Supply (Questar) natural gas pipeline, exploration companies became interested in natural gas throughout the Uinta Basin. This interest was also encouraged along the southeastern edge of the area when access became available to the north-south Northwest (El Paso) pipeline at about the same time.

During the 1960s many new gas fields were discovered and developed in the areas surrounding the North Hill Creek Project area (Osmond, 1968; Stowe, 1970). These

fields fell into one of the following three categories:

Natural Buttes Area Wasatch/Mesaverde fields: Rock House, Buck Canyon, Southman Canyon, Bonanza, Oil Springs, Island, River Junction;

Isolated Wasatch/Mesaverde fields: Flat Rock, Peters Point, Nine Mile Canyon, Stone Cabin;

Dakota/Cedar Mountain/Morrison fields: San Arroyo, Bryson Canyon, East Canyon, Fence Canyon, Bar X, Moon Ridge, Ice Canyon, Segundo Canyon, Westwater, Horse Point.

Oil and gas exploration in the immediate vicinity of Flat Rock Field dates back to 1922, when two shallow Green River Formation tests were drilled in what is now the productive area of the field. The deeper of these wells, located in Sec. 32-T14S-R20E, reached a total depth of 2,150'. This might have been the first commercial oil well in Utah, had it been drilled an additional 1,500' into the Wasatch Formation.

In 1955, the Carter Oil Company (Exxon), looking for oil, drilled the #1 Minton State in Sec. 32-T14S-R20E. This well encountered numerous shows and gave a 500 Mcfgpd test from the Mancos Shale, but was abandoned because there was no transportation for the gas. In December of 1999 it was re-entered and successfully completed as a Dakota/Cedar Mountain/Morrison gas well. It has produced more than 1 Bcf gas.

Phillips Petroleum Company, still looking for oil in 1962-63, drilled six tests on and around Flat Rock Mesa. The second well drilled, the #2 Flat Rock Unit, was completed as the discovery well for Flat Rock Field flowing 609 bopd from the Wasatch Formation. The #6 Flat Rock Unit gave respectable oil and gas shows in the Wasatch, but was plugged and abandoned. Phillips continued its effort in the area with a 2-D seismic line from Flat Rock Field for a distance of 36 miles to the south.

The #2 Flat Rock well and surrounding acreage were acquired by Hiko Bell Mining and Oil, Vernal, after Phillips concluded that the potential did not meet its requirements. Del-Rio Resources, also based in Vernal, later became the operator and produced the well at Flat Rock on an intermittent basis for several years. This company also performed additional drilling in the area during the late 1970s and 1980s. Its operations were disrupted for several years in the mid-1980s by a dispute with federal regulatory agencies which was settled in 2001.

In the early 1980s, Del-Rio stimulated the #2 Flat Rock with a small acid job. The well responded with an initial production rate on the order of 500 bopd, declining to approximately 250 bopd before shut-in was forced by winter weather. The following spring, the well produced a few tens of bopd and the operator decided to re-stimulate it with an hydraulic fractyure treatment. The frac brought a great deal of water into the wellthe well and it never again produced.

GEOLOGY

The North Hill Creek Project sits on the south flank of the Uinta Basin, just south of the northwest plunging nose of the Uncompahgre Uplift (Figure 2). The Garmesa Fault defines the northeastern side of the Uncompahgre Uplift (Stone, 1977). Several fields are controlled by anticlines plunging north or south away from the Garmesa Fault: the Douglas Creek arch, San Arroyo Anticline, Seep Ridge Anticline, Jack Canyon Anticline (Peter's Point Field), and Stone Cabin Anticline, are each associated with significant hydrocarbon accumulations.

The photogeology map (Figure 3) shows the surface expression of several prospective structural features within the North Hill Creek Project area. The Hill Creek Anticline, on which Flat Rock Field is located, is the largest of these. Several smaller features can also be seen.

While the obvious primary exploration objectives for the North Hill Creek Project are the Wasatch, Mesaverde and Dakota formation gas zones being exploited at Flat Rock Field, there are many additional possibilities with substantial potential. Even within the primary objective formations there are multiple opportunities. The stratigraphic column in Figure 4 depicts the known pay zones in the Uinta Basin. The type log in Figure 5 indicates the lithology of the potential pay zones at North Hill Creek. The Key Well Map (Figure 6) regional cross-sections A-A' and B-B' (Figures 7 & 8), put the North Hill Creek Project in the context of significant wells in the surrounding area.

Potential Plays

The following section discusses each of the plays believed to have oil and/or gas potential at North Hill Creek, listing name, geologic abbreviation, estimated average depth within the area, analog fields, and other pertinent information. Paleogeographic maps are used to put each play in its depositional context relative to North Hill Creek. It should be noted that the depth ranges listed below are for the north edge of Township 15 South, Range 20 East. These depths should decrease slightly to the south.

Green River Formation - Tgr - Surface to 2,300'

During Paleocene and Eocene time, lacustrine and associated lake-margin fluvial sediments were deposited in the Uinta Basin. The Green River Formation is associated with the lacustrine beds deposited in ancient Lake Uinta. The Green River Formation forms the surface throughout the North Hill Creek area where it is approximately 2,300' thick. Figure 9 is a paleogeographic reconstruction of the early Eocene (Franczyk et al, 1992). The Green River Formation is not expected to be productive in the North Hill Creek area.

Wasatch Formation - Tw – 2,300' to 4,500'

The Wasatch Formation is associated with the lake margin fluvial and alluvial plain deposits. The early Eocene paleogeographic map (Figure 9), and lithologic cross-section (Figure 10) summarize the relationship between the Green River/Wasatch and their depositional environment. By convention, many operators in the area include rocks of the Colton, Flagstaff and North Horn formations in the Wasatch Formation. The

Wasatch is the primary oil objective at North Hill Creek. It also holds significant promise for NGLs and natural gas.

The top of the Wasatch Formation will be encountered at a little more than 2,000'. In this area the Wasatch is approximately 2,250' thick and consists of fluvial channels cut into finer grained alluvial plain sediments. Dozens of fields to the north of North Hill Creek produce both oil and gas from the Wasatch. Figure 6 shows these fields, identified by a *Tw* symbol, and indicates cumulative production through 1998 (Utah Dept. of Natural Resources, 1999), while Figure 11 is a schematic diagram showing which intervals are productive on a regional basis.

In the Greater Altamont-Bluebell Area the Wasatch Formation has produced more than 250 MMbo. This oil is world famous for its bright yellow color, high paraffin content and resulting high pour point. The oil produced at Flat Rock Field has the bright yellow color, but not the high pour point. There has been no other oil like it anywhere in the area. More than 3 Mmbo (condensate) and a much larger volume of natural gas liquids have been produced from the Wasatch in the Greater Natural Buttes Area. To the northwest in the Peter's Point Field 135 Mbo have been produced from one Wasatch well.

Gas in the producing fluvial channels within the Wasatch may be directly detected using seismic data. This technique has been successfully applied by Meridian (Burlington Northern) at Powell Park Field in the Piceance Basin.

Mesaverde Group - Kmv – 4,500' to 6,500'

The Upper Cretaceous Mesaverde Group is a wedge of alluvial fan, coastal plain and braided stream deposits laid down along the western edge of a retreating sea (Fouch et al, 1992). Figure 12 is a generalized depositional model used to illustrate these relationships. The several units comprising the Mesaverde Group include the undifferentiated alluvial Tuscher and Farrer Formations; the deltaic coal and carbonaceous shale of the Neslen Formation; the near-shore and marginal marine Sego Sandstone (Figure 13); the coastal plain and braid plain deposits of the Castlegate Sandstone; and a thin section of the nonmarine coal-bearing Blackhawk Formation (Figure 14). In the area of the North Hill Creek Project the total thickness of this section is on the order of 2,000'. The Mesaverde Group units are primary gas and NGL objectives.

Mesaverde Group sandstones are important reservoirs in the Greater Natural Buttes Area. They are the tightest reservoirs in the field, but can be made highly productive by modern hydraulic fracturing techniques. In addition to the continuous-type gas accumulations of the Mesaverde, channel sandstones and structurally controlled accumulations are also important. The potential to improve gas production from the Mesaverde by using 3-D seismic data to identify these features and then applying modern completion techniques is thought to be significant.

The carbonaceous shales and coals of the Mesaverde Group are the primary source rocks for the non-associated gas in the Mesaverde, Wasatch and, perhaps, Green River

reservoirs. The relatively high geothermal gradient and slight over-pressuring in the Mesaverde suggest that gas is being generated even today (Osmond, 1992). The northwest-southeast trending fault and fracture zones at both Natural Buttes and Flat Rock-North Hill Creek presumably account for the migration of gas through the tight Tertiary and Upper Cretaceous rocks.

Mancos Shale - Kmu – 6,500' to 9,800'

The Mancos Shale is a thick sequence of marine siltstones, claystones, shales and fine-grained sandstones which was deposited in the Western Interior Seaway, a dominant Upper Cretaceous feature of much of the present Rocky Mountain area (Molenaar et al, 1990). Nearly three quarters of a mile thick in the area of the North Hill Creek Project, these typically black and gray shales are important source rocks that may contribute gas to several included sands and to the Mesaverde reservoirs above.

The Mancos B (Figure 15), or Emery Sandstone, has been completed as a gas producer in several wells to the north, east and southeast. It produced decent shows in the one well at Peters Point that penetrated it. It also gave a DST of 500 Mcfgpd in the Minton State #1 at Flat Rock field in 1955. None of these wells has been an outstanding producer. However, the potential for gas from the Mancos B, Frontier and Ferron (Figure 16) make these formations good secondary gas and NGL objectives.

Dakota Sandstone / Cedar Mountain Formation – Kd / Kcm– 10,500' to 10,900'

The Lower Cretaceous Dakota Sandstone and Cedar Mountain Formation are lithologically similar deposits of marine origin (Figure 17). Together they comprise the Dakota Group and were deposited over a wide area. The Dakota is approximately 150' thick and the Cedar Mountain approximately 250' thick. Both consist of near-shore or coastal plain coarse clastic sediments carried by an extensive system of braided streams to, or into, the developing shallow sea. The several sandstone units are beach deposits separated by thicker mudstones and carbonaceous shales of the floodplain deposits. A well-recognized basal conglomerate is the lowest unit of the Dakota (Young, 1975). The Dakota Group rocks are primary natural gas objectives at North Hill Creek.

Dakota reservoirs have been highly productive to the north, east, southeast and south of the project area. There are several good Dakota wells at Flat Rock Field adjacent to the project area.

Utah's largest Dakota field is San Arroyo (Suek et al, 1993), which has produced more than 143 Bcfg and 180 Mbo through 1999. Bar X, Bryson Canyon, East Canyon, Fence Canyon, Seep Ridge, and Westwater are the other important Dakota fields in Utah.
A little more than 4 miles to the south of the project area are three small Dakota fields (Moon Ridge, Ice Canyon and Segundo) where gas production has ranged from 1 – 2 Bcfg per well. Most Dakota fields are located along asymmetrical, northwest-southeast-trending anticlines. The North Hill Creek Project area is crossed by at least one such structure and appears to be highly prospective for Dakota gas.

Morrison Formation - Jm – 10,900' to 11,400'

The Morrison Formation is closely related to the overlying Dakota and Cedar Mountain. These alluvial plain and marsh deposits also include a basal conglomerate. All three formations are characterized by productive sands whose net thickness is a fraction of the total formation thickness (Robertson et al, 1993). The Morrison appears to be approximately 500' thick in the vicinity of North Hill Creek, and joins with the Dakota Group as a primary gas objective.

Dakota Group and Morrison production is most often commingled and cannot be differentiated in production statistics. There are eight Dakota/Morrison fields in Utah with cumulative gas production in excess of 10 Bcfg. Within these fields wells in the1-6 Bcfg range are common. Although production statistics are not available, the Morrison was the reservoir that provided gas at high rates to Vernal from 1925 until 1941 from the original incarnation of Ashley Valley Field.

Entrada Sandstone – Je - 11,500' – 12,000'

The Jurassic Entrada Sandstone is separated from the Morrison Formation by a thin section of Curtis and Summerville. The Entrada has produced a small amount of oil from a single well in the Ashley Valley Field. It has also produced minor, usually carbon dioxide-rich, gas at San Arroyo, Bryson Canyon and Bar X fields, and helium at Harley Dome. In northwestern Colorado the Entrada has produced oil from closed anticlines. There are relatively few penetrations of the Entrada in the Uinta Basin, so it is possible that it may yet prove productive under structurally and stratigraphically favorable conditions, such as exist on the Hill Creek Anticline. It appears to be approximately 600' thick in this area.

Geological Summary

The North Hill Creek acreage holds significant promise for the production of oil, gas, and natural gas liquids from multiple pays. Until quite recently, this promise was based on a spectacular initial oil potential from a well drilled by Phillips at Flat Rock Field in 1962, which was not borne out by subsequent production, and by gas shows from several formations. Since the construction of the Comet Pipeline and the ensuing active drilling program in the area, it has become clear that the promise is real.

GEOPHYSICS

Existing 2-D Seismic Data

Several operators shot 2-D seismic surveys in the vicinity of the North Hill Creek Project during the 1960s and 1970s. In 1964, Phillips Petroleum followed up its discovery well at Flat Rock with a 36-mile seismic line, running more or less north-south, beginning in Sec. 30-T14S-R20E. Six miles of this line cross the center of the North Hill Creek Project. Figure 18 is a stick map showing the location of the existing seismic lines in the area.

In 1968 Conoco shot this area as part of a regional study. An east-west component of this survey runs ¼-mile north of the top of T15S-R20E for a distance of four miles. Two

longer north-south lines cross T14N-R20E, barely touching the north edge of the North Hill Creek acreage.

In 1969 Texaco, also performing a regional study, shot a long northeast-southwest line, which completely crosses T15S-R20E. A roughly east-west line four miles long crosses Flat Rock Field into the project area.

None of these survey lines is particularly well suited for the exploration of the North Hill Creek acreage. The long Phillips and Texaco lines are largely coincident and run nearly perpendicular to the Hill Creek Anticline. Taken together, the existing 2-D data cover approximately 17 line miles, of which 14 miles are essentially duplicated. The Phillips and Texaco lines were shot with dynamite. The Conoco lines were shot with a vibroseis source and the sweep was not extended above 35 Hz.

3-D Seismic Survey

Because of the lack of modern seismic data and the variety and nature of geological problems encountered at Flat Rock Field, it was decided that a 3-D seismic survey would be the best approach to exploring and developing the North Hill Creek Project acreage. 3-D seismic data would locate and define structural features that could serve as conventional hydrocarbon traps. Additionally, the data would provide a wealth of stratigraphic information that could be used to define traps with a stratigraphic component. Coherency analysis should provide detailed information about stratigraphic changes and subtle faulting that could be used to adjust well locations into areas of higher recovery due to fracturing or increased pay. Finally, it has been possible in some cases to use the data to locate hydrocarbons directly. For example, the seismic data clearly image stream channels filled with gas-charged sands in the Wasatch and Upper Mesaverde sections. There is also a real possibility of using the data to map facies changes that would control stratigraphic traps in the marine section of the Cretaceous, Jurassic and older rocks.

The survey area was designed in the shape of a stylized “T” with the crossbar covering the Hill Creek Anticline, (Figure 19). The upright extends southwest diagonally across the center of T15S-R20E. This arrangement afforded maximum coverage of the gentler topography within the project area. Total coverage is approximately 15 square miles with a minimum 8 fold. An adjacent area on federal and state minerals in T14S-R20E, which includes the Flat Rock Field, was surveyed at the same time with the Flat Rock Field operator as a partner and no DOE participation.

All or portions of the following sections were surveyed with partial funding from the DOE:

T14S-R21E: 31
T15S-R20E: 1
T15S-R20E: 1, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 17, 19, 20, 21, 22, 23 & 24
T15S-R21E: 6, 7, 18 & 19

Equipment and Field Parameters for the 3-D seismic survey were:

Recording System – 1200 channel I/O System II digital w/ 2 ms sample rate

Survey System – Trimble 4000 SSE, SSI GPS, total station w/ AutoCad mapping
Energy Sources – Vibroseis (80%) – 4 buggy vibrators (59,000 lbs. peak force), equipped w/ Pelton Advance II electronics (ground force phase control) and Pelton VGPS
- Dynamite (20%) – Shot holes drilled with buggy rigs up to 60' in depth with up to 15 lbs. of explosive and one cap, adjusted relative to near surface sandstone bench penetration

Group Interval – 220 feet
Source Interval – 220 feet
Receiver Geometry – Swath, 10 lines of 108 channels each, 660-foot line spacing, roll on/roll off
Source Geometry – Source patterns diagonal to receiver lines, 1320-foot pattern spacing
Seismometers – 4000 groups of 6 per string, 10 hz, digital grade geophones
Subsurface Cell Size – 110 feet X 110 feet
CDP Coverage – 45 nominal fold
Sweeps – 8, 10-second weeps w/ 5-second listens

Although receiver lines were laid out across rough terrain by linesmen on foot, the source points were all located in terrain accessible to the articulated buggy-mounted vibrators and shot hole rigs. There was no helicopter-supported drilling.

The survey was designed by Brett Gunneson and David Suek, Black Coral LLC (Denver); Stuart Wright, WesternGeco (Denver); and Marc Eckels, Wind River Resources Corp. (Roosevelt).

Field data acquisition was performed by WesternGeco Crew 780, Louise Sandberg, Project Manager, and Mike Waugh and Randy Shannon, Crew Chiefs. Field work was monitored by Alvin Ignacio, Ute Indian Tribe Energy and Mineral Resources Department, and Jim Labo (Denver), consulting geophysicist to Wind River Resources Corp. Acquisition commenced October 4, 2000, and was completed on December 7, 2000.

Processing of the data volume was performed by WesternGeco's Denver Processing Center, which is managed by John Young. John Markert was the Senior Geophysical Analyst and Irina Nicholson was the Geophysical Analyst. Processing was supervised for Wind River Resources by David Suek, David Brewster, Brett Gunneson and Paul Harrison of Black Coral LLC, and Marc Eckels. Processing began during the first week of December and was complete on March 1, 2001.

Interpretation of the North Hill Creek 3-D survey was performed by Paul Harrison and Denise Harrison of Fall-Line Exploration, working under contract to Black Coral LLC. Geologic input was provided by David Suek, Black Coral LLC, and Marc Eckels. The interpreted survey was presented on May 30 & 31, 2001, in a technical meeting at the Denver office of Black Coral LLC. The presentation was made by Paul Harrison and

Denise Harrison. Participants in the meeting were Marc Eckels, Wind River Resources Corp.; Dave Suek and David Brewster, Black Coral LLC; Walt Johnson, consulting geophysicist; and Dominion Exploration employees Randy Nickerson, geophysicist and Brian Coffin, geologist. Dominion was included in the meeting and provided with a copy of the data in fulfillment of an obligation to the Ute Indian Tribe, with whom Dominion was a partner in the nearby Naval Oil Shale Reserve #2.

Cultural Resource Considerations

The Uintah & Ouray Agency of the Bureau of Indian Affairs granted a categorical exclusion from the requirements of the National Environmental Policy Act for the 3-D seismic survey. The Bureau of Land Management also allowed surveying across federal surface and minerals in T15S-R21E, which was necessary to the development of full fold on the Tribal acreage.

A cultural resource survey and inventory was conducted for the seismic survey area by James Truesdale and assistants of An Independent Archaeologist (AIA), Laramie, Wyoming. Alvin Ignacio of the Ute Indian Tribe Energy and Minerals Resources Department accompanied the archaeologists in the field. The survey was conducted on a block basis with progress reports to the Ute Tribe and the Uintah & Ouray Agency of the Bureau of Indian Affairs.

Environmental Considerations

Buys and Associates, Denver, conducted a block survey of all acreage within the survey area and found no endangered plants or animals of concern.

AREA DRILLING AND PRODUCTION HISTORY

Oil and gas development in the vicinity of the North Hill Creek Project has been confined to several concentrated areas. While geology and the occurrence of hydrocarbons certainly have a role to play in the pattern of development, it could be argued that at least as important have been the issues involving surface and mineral ownership, infrastructure, gas market, and the more recent Wilderness Study Areas.

In 1948, an area of 510,859 acres, including the project area, was restored to the Ute Indian Tribe under Public Law 440. The U.S. retained mineral ownership under much of the restored land, creating a large area of split-estate ownership. This area has been sparsely explored compared to the surrounding areas, with the reasons probably much more related to ownership issues than to geology.

Interestingly, two dry holes were drilled in the Green River Formation at Flat Rock Field in 1922. Drilling in search of oil during the 1950s and 1960s took place throughout the surrounding area, although on an extremely limited basis on Tribal land to the south and west. Many of these exploration holes found gas, but were abandoned after drilling due to lack of access to pipelines. Some were completed as oil wells. Both the completed oil wells and the significant gas show wells are discussed below.

Poor access and a lack of gas transportation infrastructure have long impeded the development of oil and gas in this area. Given the lack of paved roads abundance of rough terrain, reasonable access has been a practical problem for most of the areas south of the White River. The developed areas farther to the south, such as San Arroyo, Bryson Canyon, and Segundo Canyon, are served by roads and gas pipelines that enter the Book Cliffs from Interstate 70 and Grand Junction to the south and east.

Analog Fields

Several gas fields in the Uinta Basin provide reasonable analogs for comparison with the North Hill Creek acreage. The following fields have been selected on the basis of geological characteristics that appear to be good analogs, and for their proximity. Unless otherwise noted, production data are through 1999.

Flat Rock Field

Year of Discovery: 1962 Number of Active Wells: 8
Cumulative Production: 61,853 bo / 1.3 Bcfg / 9,617 bw*
1999 Production: 9,032 bo / 0.5 Bcfg / 2,092 bw
Abandoned Production: 0 bo / 0 Mcfg / 0 bw
Producing Formations: Wasatch, Mesaverde, Dakota & Cedar Mountain
Operating Companies: Del-Rio/Orion
*Note: The records of the DOG&M show only three wells at Flat Rock Field at the end of 1999. Five wells are listed as “Undesignated”, despite the fact that they are clearly part of the field. These production figures include all eight wells. Also, 20,684 bo production appear to have gotten “lost” in state records since 1970. This production should probably be added to the cumulative number listed above.

Although drilling at Flat Rock dates all the way back to 1922, only recently has the field become a significant producer. Phillips’ 1962 discovery well at Flat Rock was brought in as a Wasatch oil well at 609 bopd. Due to access problems the cumulative oil production from this well was only a few thousand barrels of oil.

Hiko Bell Mining acquired the wells and associated leases, which are split estate with tribal surface and federal or state minerals, in the late 1960s. The property passed to Del Rio Resources in the late 1970s, and a 1981 acid job reportedly restored production at the discovery well to approximately 500 bopd. This did not last long due to severe winter weather, and when the well was restarted the following spring it made a few tens of bopd. A cross-linked gel frac intended to re-stimulate the well was performed and brought in an unmanageable amount of water, causing the well to be plugged and abandoned.

Flat Rock Field is developed on the Hill Creek Anticline, one of the secondary structures associated with the Garmesa fault zone. Since 1997 a highly successful effort to develop the field has been made by Del-Rio/Orion. The early 1997 completion of the 32-1A DelRio/Orion well as a 1,900 Mcfgpd Wasatch gas well at approximately 3,500’ initiated a drilling and pipeline construction program that has matched significant gas

production with the transportation necessary to get it to market. The 1997 well was flowing 1,094 Mcfg at the end of 1998 and has now produced a total nearly 1 Bcfg.

Del Rio/Orion reentered the Carter Oil Minton-State in late 1999. This key well was drilled to the basement at 12,897' and abandoned in 1955 after encountering gas shows in the Wasatch and Mesaverde, and testing at 500 Mcfgpd in the Mancos. The reentry was completed in the Cedar Mountain for 2,000 Mcfgpd. The well averaged approximately 1,500 Mcfgpd during its first year. The Wasatch, and perhaps Mesaverde, production above these formations will be available for future development, including oil from the Wasatch. Through 1999 three wells had been reentered and six new wells had been drilled.

Del-Rio/Orion has established that Flat Rock Field is developed on a closed anticlinal structure, presumably associated with the Garmesa Fault on the northeast flank of the Uncompahgre Uplift. A number of other gas fields in the Book Cliffs area, including San Arroyo (140 Bcfg), Bryson Canyon (21 Bcfg), and East Canyon (13 Bcfg) are similarly situated.

Del-Rio/Orion has found that the Dakota up dip on the structure appears to be silicified to such an extent that it may be tight in some areas of the Flat Rock Field. The field is presently developed in sections 28, 29, 30 and 32, T14S-R20E.

<u>San Arroyo Field</u>
Year of Discovery: 1955 Number of Active Wells: 105
Cumulative Production: 179,885 bo / 143.04 Bcfg / 16,499 bw
1999 Production: 287 bo / 2.50 Bcfg / 184 bw
Abandoned Production: 44,148 bo / 14.48 Bcfg / 2,596 bw
Producing Formations: Dakota, Cedar Mountain, Castlegate, Morrison & Entrada
Operating Companies: Lone Mountain, Beartooth, Enogex and Northstar

San Arroyo Field is the largest of approximately twenty gas fields scattered across the southeast flank of the Uinta Basin. These fields produce from the Dakota, Cedar Mountain and Morrison formations where lenticular sands are associated with secondary anticlinal structures developed along the Garmesa fault zone.

A close examination of the relationship between production and structure at San Arroyo makes it very clear that structural position is significant. The cumulative production numbers are highest for wells on the crest of the anticline, descending in tree-ring fashion to the outer edges of the area of closure. The size, shape and orientation of the anticline on which San Arroyo is developed are very similar to the structure found at North Hill Creek. Even the structural style, characterized by a gently dipping northeast flank and an abruptly faulted southwest flank, is the same.

San Arroyo is located 22 miles to the southeast of North Hill Creek, although several smaller fields of a similar nature are closer. The average well at San Arroyo produced 1.2 Bcfg through 1999, however many wells are in the 3-6 Bcfg range and a few have

produced 8-12 Bcfg. These cumulative production figures are typical of the Dakota/Cedar Mountain/Morrison wells throughout the area, including Moon Ridge, Ice Canyon and Segundo Canyon, which are 3 to 7 miles south of the project area.

The large cumulative production values for these wells are a direct reflection of their longtime access to reasonable transportation. Discovered during the same time period as Peters Point and Flat Rock, San Arroyo and the associated fields were developed and are now quite mature because they had early access to the Pacific Northwest Pipeline system to the southeast of the Book Cliffs.

Peters Point Field

Year of Discovery: 1953 Number of Active Wells: 9
Cumulative Production: 135,562 bo / 5.11 Bcfg / 4,868 bw
1999 Production: 527 bo / 184,392 Mcfg / 736 bw
Abandoned Production: 135,035 bo / 564,256 Mcfg / 1,582 bw
Producing Formations: Green River and Wasatch
Operating Companies: Wasatch Energy

The Peters Point-Stone Cabin area is located 20 miles to the northwest of North Hill Creek. With the top of the Wasatch at +/-3,500', the gas is shallower than at Natural Buttes and very close to the depth expected in the project area. It occurs in a geological setting where structural and stratigraphic traps play an important role in accumulating the gas. Oil has been produced in small quantities from the Green River, Wasatch and Mancos Formations.

Production in this area is concentrated along the Jack Canyon Anticline, a secondary structure emanating from, and sub-parallel to, the Garmesa fault zone. During the last fifty years, approximately forty scattered wells have been drilled in an area measuring roughly four miles by sixteen miles. Nine of these wells were tested between 1,000 and 4,000 Mcfgpd. Three have individual cumulative production in excess of 1 Bcfg. The others have cumulative production less than 1 Bcfg or were drilled and abandoned due to lack of pipeline access.

The Peters Point-Stone Cabin area includes Peters Point, Jack Canyon, Dry Creek, Prickly Pear, Nine Mile and Stone Cabin fields. Good gas shows in wells that were drilled and abandoned in and among these fields suggest that a development program taking advantage of the drilling and completion practices developed at Natural Buttes might allow Peters Point to grow as that larger field has: by the coalescing of several smaller fields.

In the first paper written about Peters Point Field, Hendel (1957) stated that, "proven gas reserves exceed 40 billion cubic feet of approximately 1,000 b.t.u. gas" from five completed gas wells. The fact that Peters Point Field has produced only 4.9 Bcfg requires some explanation. The explanation is important to a complete understanding of Peters Point and puts several other fields and many "dry holes" in the area in the context of their times and circumstances.

Discovered by El Paso Natural Gas in 1953, Peters Point produced a small quantity of oil from Green River and Wasatch sands. The gas production remained essentially shut-in for many years. Even after the construction of the Mountain Fuel (Questar) pipeline in 1961, the market was seasonal and no gas was sold during the summer months. Due to the elevation, topography and remoteness of the field, it often shut itself in during the winter months when pumpers were unable to reach the wells. Some wells remained unconnected for as many as forty years. The ruggedness of the area is illustrated by the fact that a fifty-mile drive was required to go from one well in the field to another even though they were within sight of each other a straight-line distance of two miles apart (Clem, 1991).

Peters Point Field passed from El Paso Natural Gas to Reserve Oil & Gas, to Getty, and then to Texaco during the years when the market was weak. By the time there was demand for the gas from Peters Point the strong operators had given up and the field had been sold to small independent operators who were technically and financially incapable of realizing its potential.

During 1999, Wasatch Energy Corp acquired most of the producible Peters Point-Stone Cabin area wells. Many of these had been shut-in by the previous operator, and it is understood that Wasatch plans to return them to producing status.

The Peters Point-Stone Cabin area has been a victim of circumstance repeatedly during its nearly fifty-year history. While much can be made of its remoteness and lack of access to markets, the primary obstacle to the realization of its full potential has been bad luck. For many years these wells were operated by capable companies who would undoubtedly have developed the area had they been able to sell the gas. When the demand finally arrived, the new owners were incapable of responding. It has not helped that Wilderness Study Areas on the west side of the Green River have been proposed for some of the most prospective acreage, despite the presence of roads, pipelines, wells and other facilities.

Peters Point is a study of how not to develop a gas field. At the same time, it is hard not to appreciate the reserves that remain in the area between Peters Point and Stone Cabin.

<u>The Greater Natural Buttes Area</u>

Year of Discovery: 1955 Number of Active Wells: >1,116
Cumulative Production: 3,804,578 bo / 730.6 Bcfg / 3,979,914 bw
1999 Production: 236,666 bo / 58.2 Bcfg / 681,512 bw
Abandoned Production 328,039 bo / 32.6 Bcfg / 395,344 bw
Producing Formations: Green River, Wasatch, Mesaverde
Operating Companies: El Paso, Dominion, EOG, Wexpro, and others

The first production of oil and gas in the Natural Buttes area was from the Mesaverde in a 1952 Conoco well, which depleted quickly and was abandoned within a matter of

months. In 1955, the Continental Oil #2 Chipeta Wells Unit was completed as a Wasatch gas well. This is the generally accepted discovery well for Natural Buttes.

Additional scattered gas discoveries established the existence of more than a dozen gas fields in what is now known as the Greater Natural Buttes area even before the 1961 completion of the Mountain Fuel Supply 20" pipeline to the Wasatch Front. As development of these fields proceeded, and as additional fields were discovered, several fields coalesced due to infill drilling to form the present Natural Buttes area in T8-11S, R18-24E, Uintah County.

Natural Buttes produces gas from what the USGS calls "continuous-type" gas accumulations in the Wasatch and Mesaverde Formations (Fouch et al, 1992; Schmoker et al, 1996). Continuous-type gas accumulations are "…large areas within which the reservoir rock is everywhere charged with gas". They are characterized by occurrence downdip from water-saturated rocks; the lack of an obvious structural or stratigraphic trap or seal; crosscutting of lithologic boundaries; low matrix permeability; and close association with source rocks. Production characteristics include large in-place gas volume; low recovery factor; absence of truly dry holes; and lack of a pattern for individual well production rates and cumulative production.

In one of the most important papers on Natural Buttes, John Osmond (1992) cites evidence that the Mesaverde, which is believed to be the source for both Mesaverde and Wasatch gas, may be generating gas at the present time even while it is being produced. Osmond discusses the continuous nature of the gas accumulations at Natural Buttes, but emphasizes the importance of channel sands and stratigraphic traps in many of the better wells in the field. It is generally accepted that an average well at Natural Buttes will ultimately produce more than 0.75 Bcfg. Several wells have produced in excess of 4 Bcfg to date.

Key Wells

The following wells have been selected on the basis of the proximity to North Hill Creek and results that may bear on the potential of the project area, and/or penetration of the deeper formations.

Del Rio/Orion 32-1A – 1997
ne nw 32-14S-20E, Flat Rock Field, Uintah County
TD: 6,387' in Mesaverde
IPF: 1,900 Mcfgpd in Wasatch
Cumulative Production: 0.9 Bcfg in three years
Current Operator: Del Rio/Orion
This well demonstrates the value of modern drilling and completion techniques applied in the Wasatch.

Carter Oil 1 Minton State – 1955 (reentered by Del Rio/ Orion in 1999 and completed as the 32-5A)

c ne se 32-14S-20E, Flat Rock Field, Uintah County
TD: 12,897' in the crystalline basement
DSTs: five run in Wasatch, Mesaverde and Mancos (500 Mcfgpd)
Current Operator: Del Rio/Orion
Reentered and completed in late 1999, cumulative production >1 Bcfg
Another example of the successful application of modern technology.

Sinclair Oil & Gas 1 Uintah- Federal 219 – 1962
c nw nw 15-14S-19E, wildcat, Uintah County
TD: 7,370' in Mancos
DSTs: 2 in Wasatch w/ good oil and gas shows; 3 in Mesaverde w/ good oil and gas shows
D & A – This well is representative of five wildcats drilled for oil in the 1950s and 1960s in the area immediately south of the NOSR-2. All but one recorded oil and/or gas shows in the Wasatch and Mesaverde. Several appear to have been bypassed gas wells.

Celeron Oil & Gas 16-3 Agency Draw – 1985
ne se se 3-13S-20E, Agency Draw Field (non-commercial), Uintah County
TD: 15,400' in Mississippian Leadville
No tests or cores
Three completions attempted in Dakota. Completed in Mancos at 5 bopd / 64 Mcfgpd / 10 bwpd
P & A
Well appears to have been drilled off structure.

Odegard Resources 16-9 Ice Canyon Unit – 1982
se ne 16-16S-21E, Ice Canyon Field, Grand County
TD: 10,121' in Morrison
No tests or cores
IPF: 2,250 Mcfgpd from commingled Dakota and Morrison
Cumulative Production: 0.98 Bcfg
Current Operator: J.C. Thompson
Representative of Dakota/Morrison wells to southeast of North Hill Creek. Adjacent Moon Ridge field has cumulative production of 2 Bcfg since 1968 from a single well.

PTS-Mono Chorney Oil Co. 2-B-27 Stone Cabin Federal – 1973
se nw 27-12S-15E, Dry Creek Field, Carbon County
TD: 6,405' in Mesaverde
DST in Wasatch @ 1,624'-68', gas @ 16 Mcfgpd.
Completed in Wasatch @ 5,004'-26' w/ acid stimulation (no details)
IPF: 16 bopd / 3,888 Mcfgpd
Cumulative Production: 1,826 bo / 1.2 Bcfg (well not in continuous production)
Current Operator: Wasatch Energy

Getty Oil Jacks Canyon 101-A – 1979 & 1981

sw se 33-12S-16E, Peters Point Field, Carbon County
TD 1979: 3,175' in Wasatch TD 1981: 17,956' in Leadville Limestone
DSTs in Wasatch – 3 run w/ gas shows in two, Mancos – 2 run with gas shows (not counting misruns)
Completions attempted in Leadville, Weber, Navajo & successful in Dakota
IPF: 315 Mcfgpd
Cumulative Production: 0.32 Bcfg (well not in continuous production)Current Operator: Wasatch Energy

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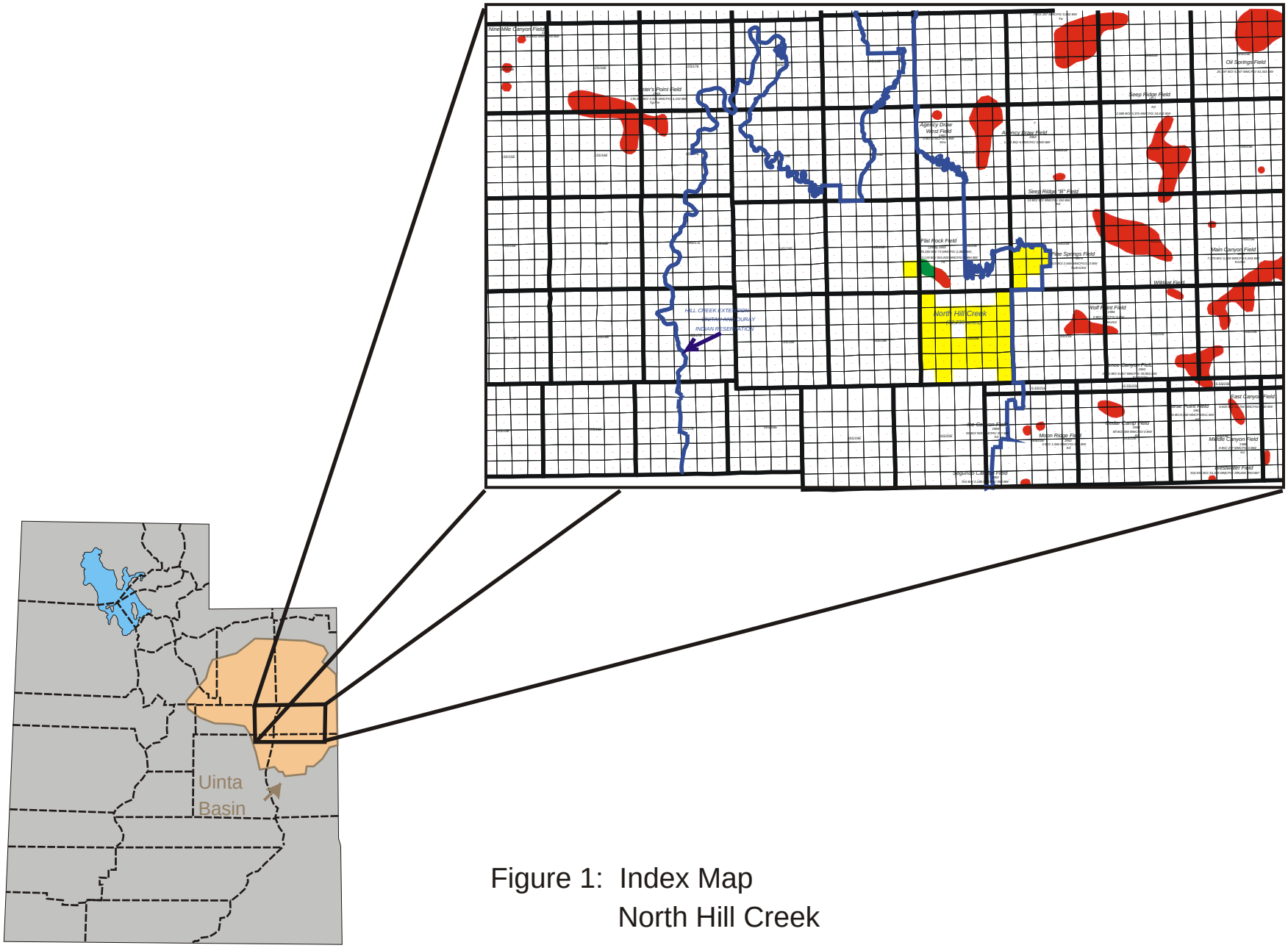


Figure 1: Index Map
North Hill Creek

Wind River Resources Corporation

Figure 1

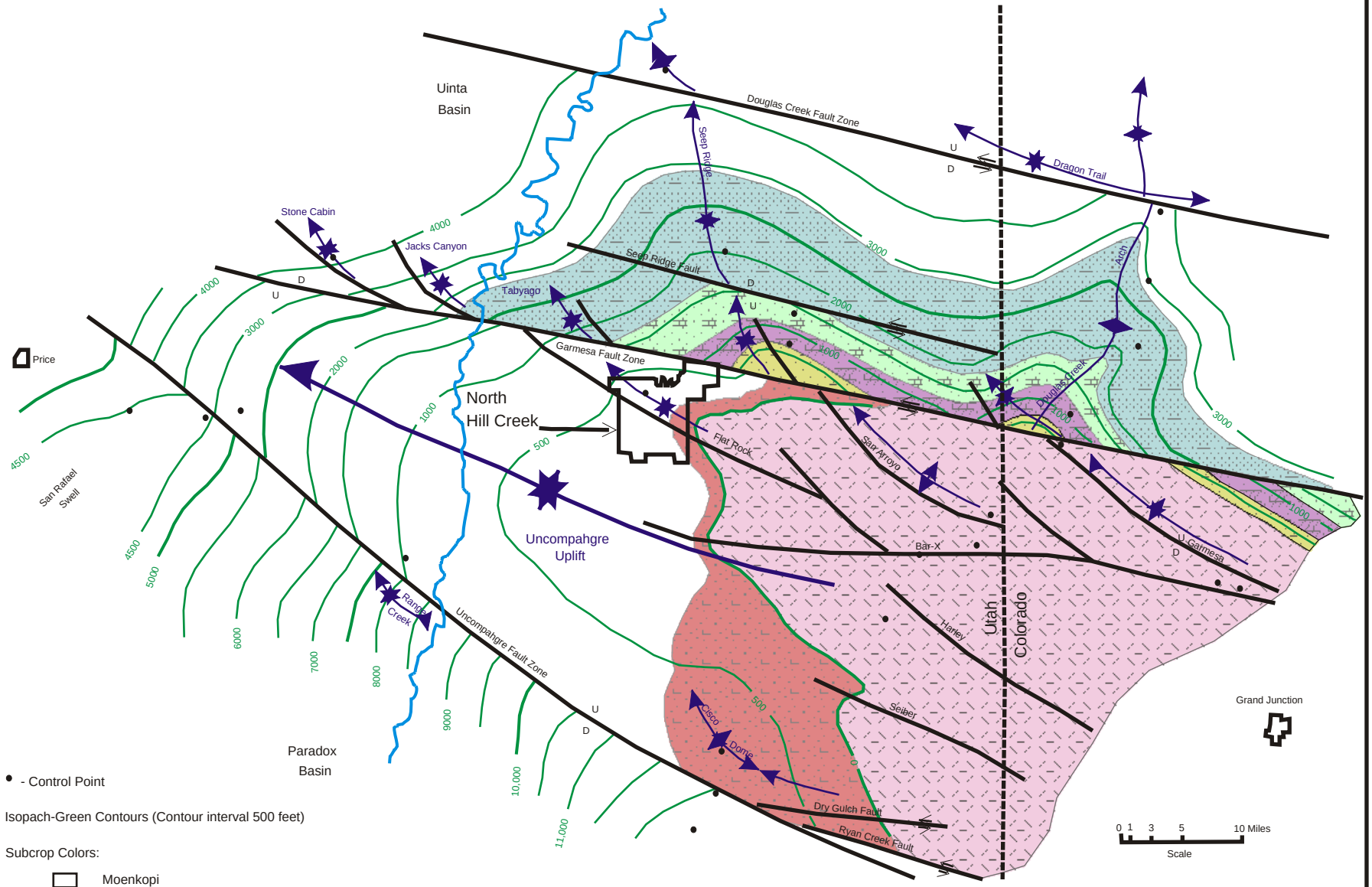


Figure 2- Isopach Map from the Base of the Upper Triassic Shinarump to the top of the Precambrian, with Subcrop Map of the rocks below the Shinarump Unconformity (Modified after Don Stone, 1977)

Wind River Resources Corporation

Figure 2

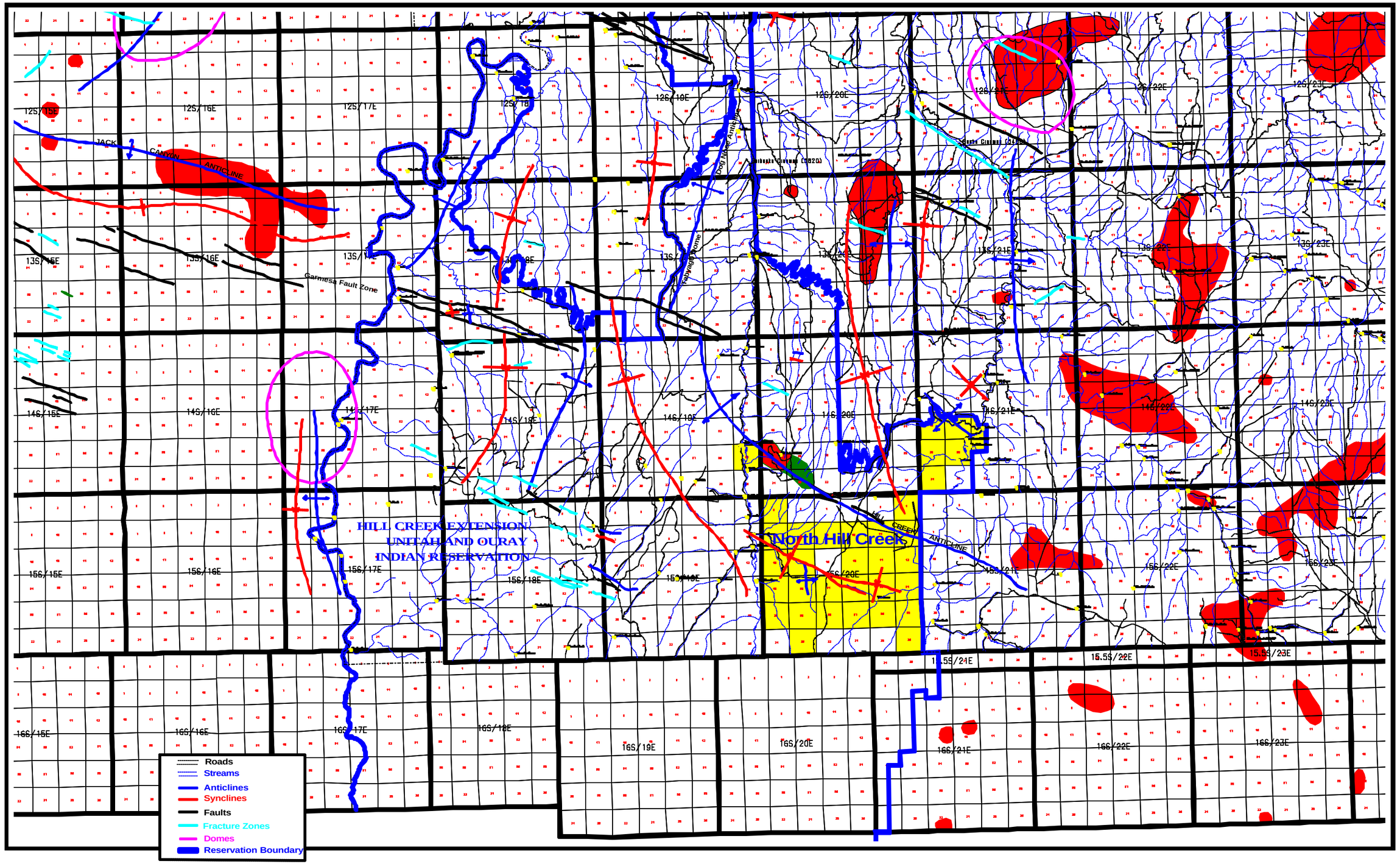


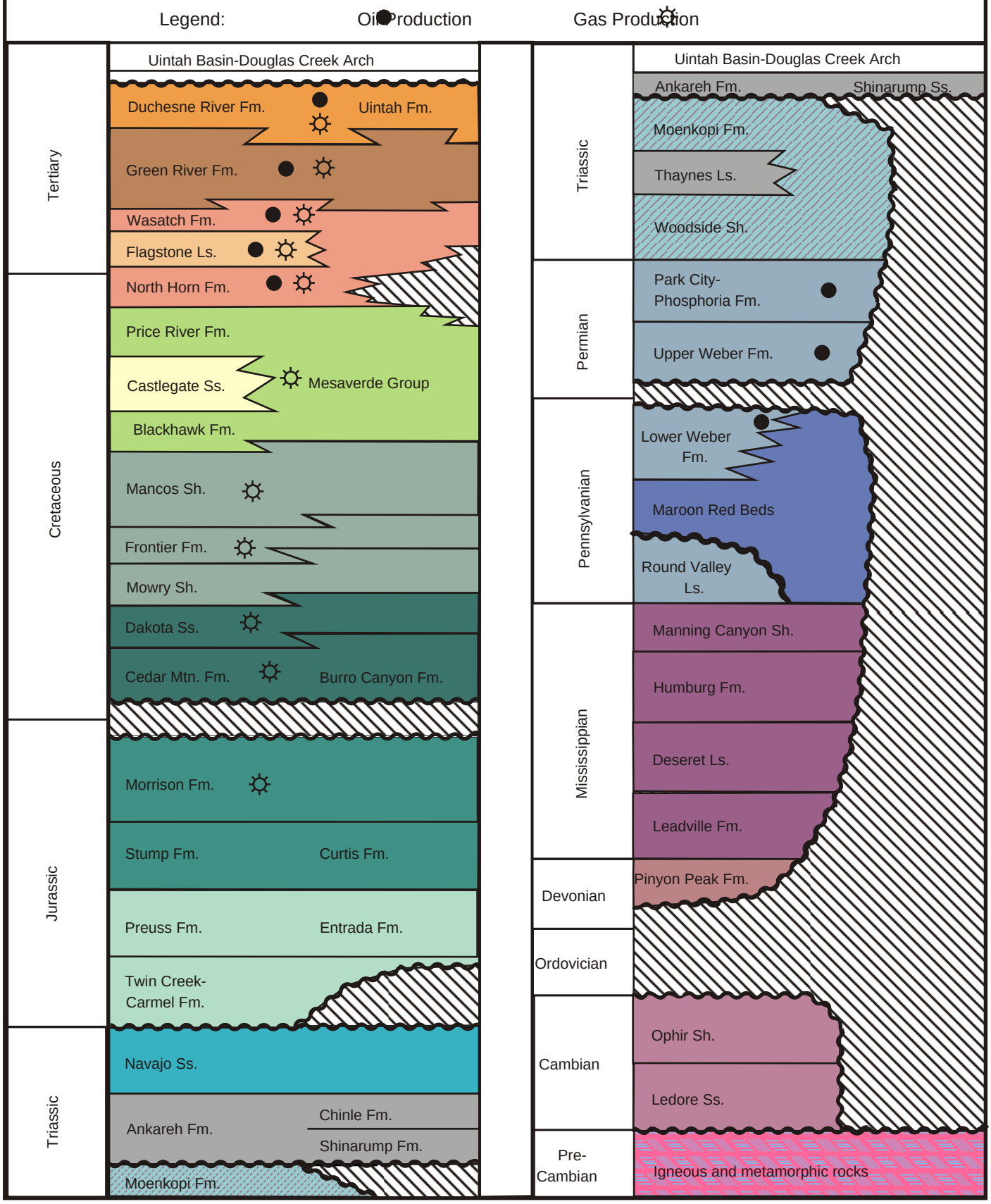
Figure 3: North Hill Creek- Photogeology & Culture

Wind River Resources Corporation

Figure 3

Figure 4

Stratigraphic column of Uintah Basin and Douglas Creek Arch (after Clem, 1985).



Wind River Resources Corporation

Figure 4

32-14s-20s

Minton State #1

Carter Oil

KB = 7502.00FT

Depth Scale = 1000.00 ft/inch

Date = Jun-03-2000 09:25:43

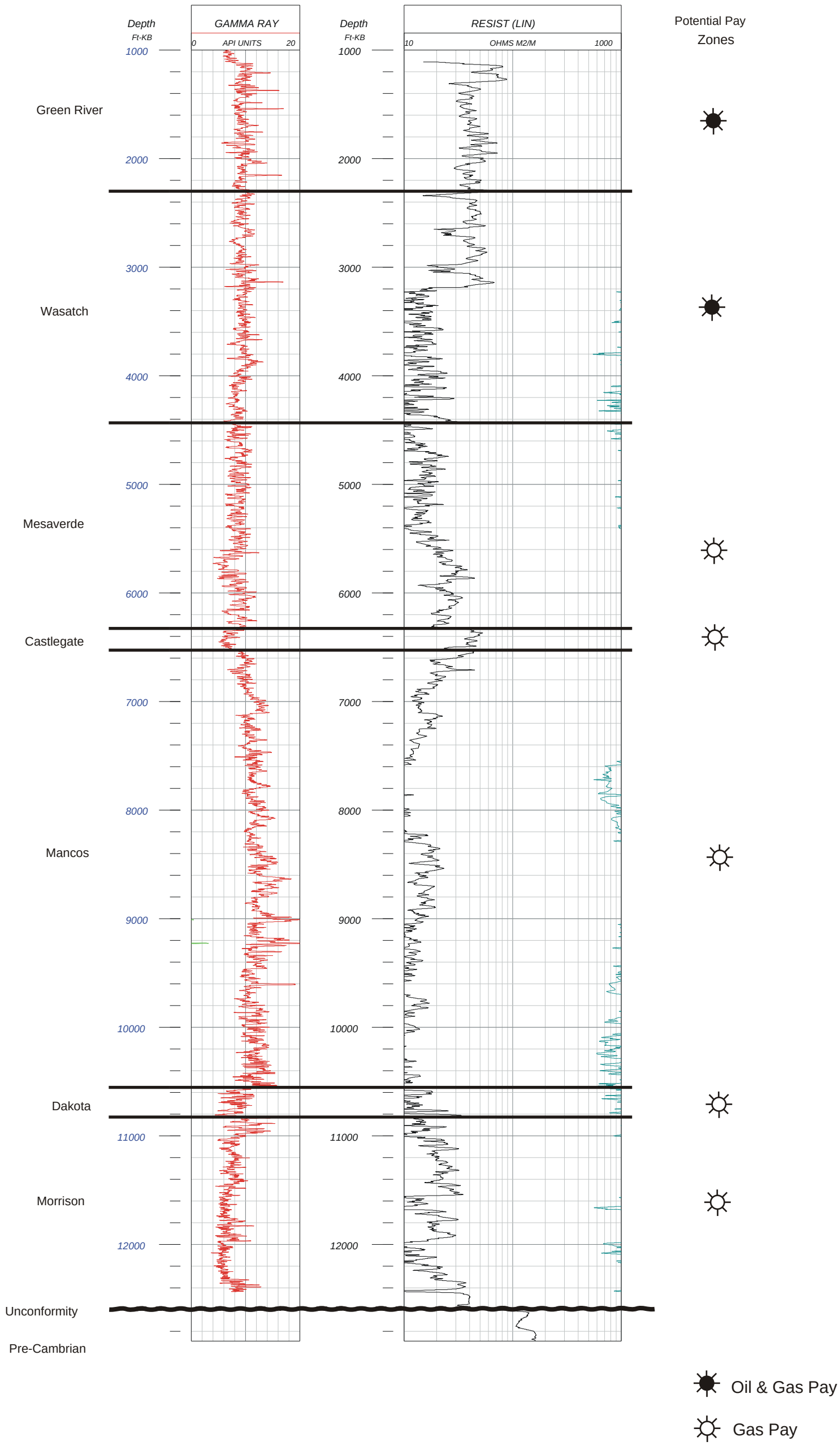


Figure 5: Minton State #1 Type Log

Wind River Resources Corporation

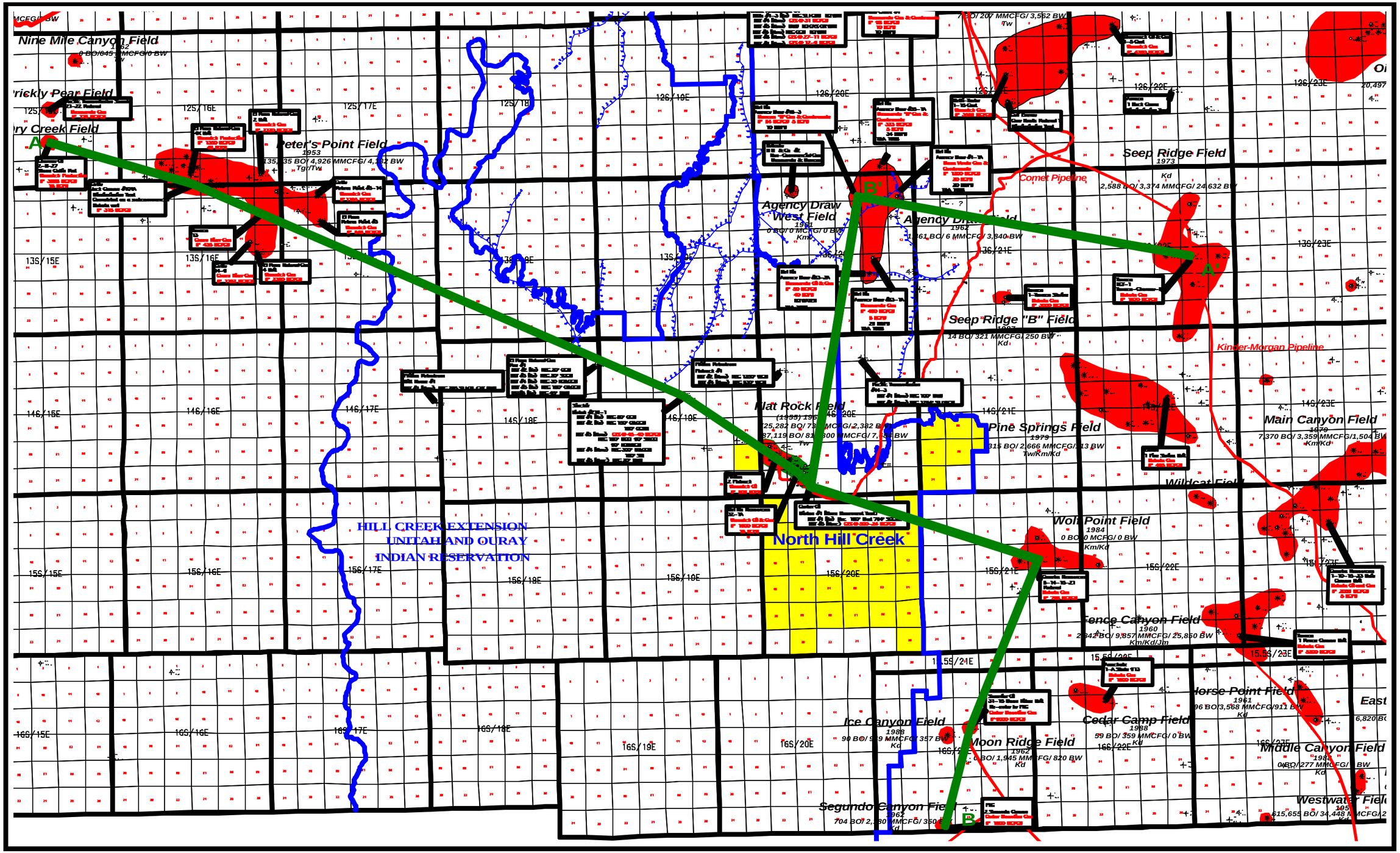


Figure 6: North Hill Creek- Key Well Map

Wind River Resources Corporation

Figure 6

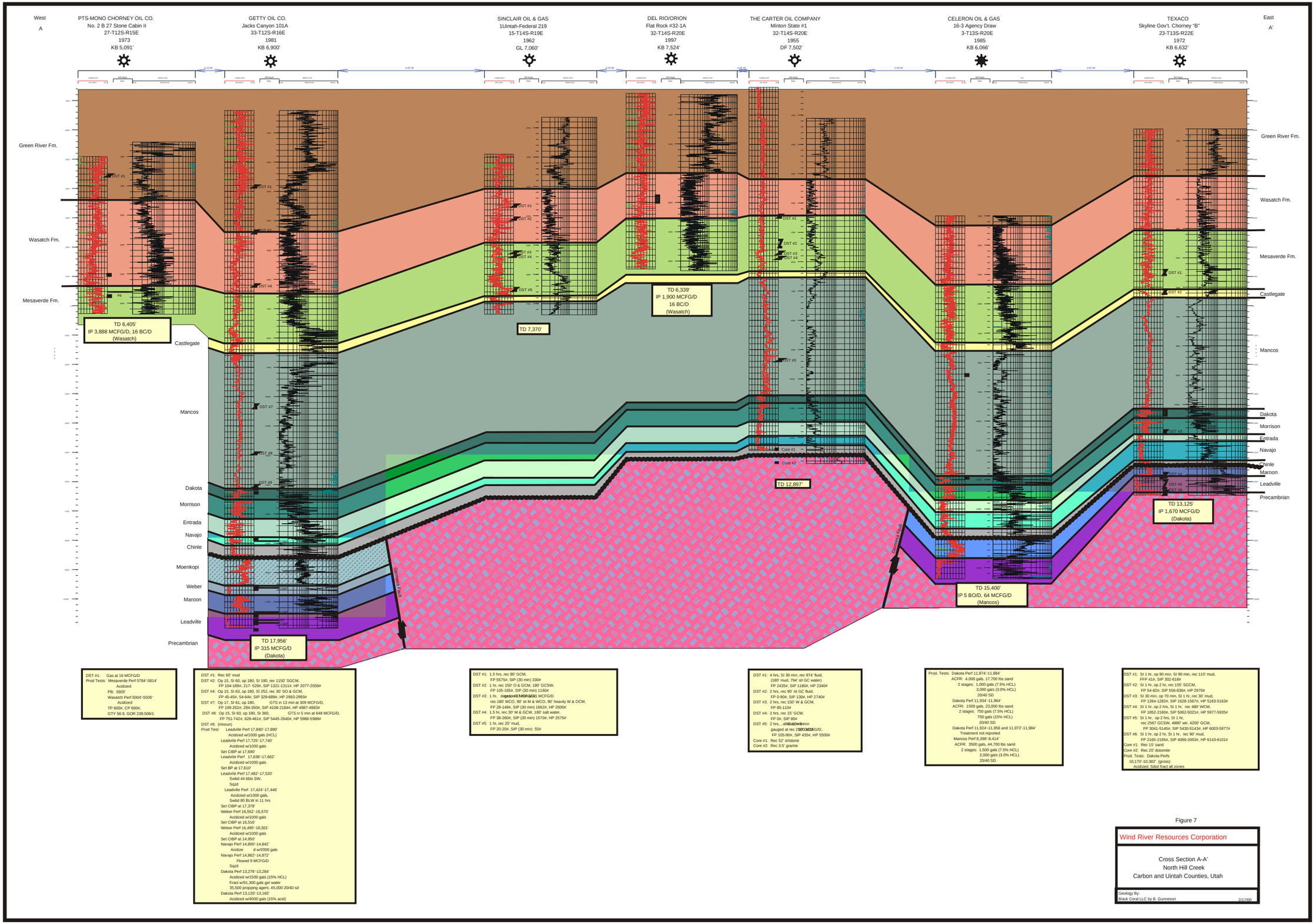

West
A
PTS-MONO CHORNEY OIL CO.
No. 2 B 27 Stone Cabin II
27-T12S-R15E
1973
KB 5,091'
GETTY OIL CO.
Jacks Canyon 101A
33-T12S-R16E
1981
KB 6,900'
SINCLAIR OIL & GAS
1Uintah-Federal 219
15-T14S-R19E
1962
GL 7,060'
DEL RIO/ORION
Flat Rock #32-1A
32-T14S-R20E
1997
KB 7,524'
THE CARTER OIL COMPANY
Minton State #1
32-T14S-R20E
1955
DF 7,502'
CELERON OIL & GAS
16-3 Agency Draw
3-T13S-R20E
1985
KB 6,066'
TEXACO
Skyline Gov't. Chorney "B"
23-T13S-R22E
1972
KB 6,632'
East
A'
Green River Fm.
Wasatch Fm.
Mesaverde Fm.
Castlegate
Mancos
Dakota
Morrison
Entrada
Navajo
Chinle
Moenkopi
Weber
Maroon
Leadville
Precambrian
TD 6,405'
IP 3,888 MCFG/D, 16 BC/D
(Wasatch)
TD 7,370'
TD 6,339'
IP 1,900 MCFG/D
16 BC/D
(Wasatch)
TD 12,897'
TD 13,125'
IP 1,670 MCFG/D
(Dakota)
TD 15,400'
IP 5 BO/D, 64 MCFG/D
(Mancos)
TD 17,956'
IP 315 MCFG/D
(Dakota)
Gunnison Fault
Gunnison Fault
DST #1: Gas at 16 MCFG/D
Prod Tests: Mesaverde Perf 5784'-5814'
Acidized
PB: 5605'
Wasatch Perf 5004'-5026'
Acidized
TP 600#, CP 600#,
GTY 56.9, GOR 239,506/1
DST #1: Rec 60' mud
DST #2: Op 15, SI 60, op 180, SI 190, rec 1150' SGCM,
FP 104-189#, 217- 529#, SIP 1321-1311#, HP 2077-2058#
DST #4: Op 15, SI 63, op 180, SI 252, rec 30' SO & GCM,
FP 45-45#, 54-64#, SIP 329-689#, HP 2993-2993#
DST #7: Op 17, SI 61, op 180, GTS in 13 min at 309 MCFG/D,
FP 109-262#, 284-350#, SIP 4108-2184#, HP 4987-4983#
DST #8: Op 15, SI 60, op 180, SI 360, GTS in 5 min at 648 MCFG/D,
FP 751-742#, 628-461#, SIP 5445-2640#, HP 5988-5988#
DST #9: (misrun)
Prod Test: Leadville Perf 17,880'-17,890'
Acidized w/1000 gals (HCL)
Leadville Perf 17,725'-17,740'
Acidized w/1000 gals
Set CIBP at 17,690'
Leadville Perf 17,636'-17,662'
Acidized w/1000 gals
Set BP at 17,610'
Leadville Perf 17,482'-17,520'
Swbd 44 bbls SW,
Sqzd
Leadville Perf 17,424'-17,446'
Acidized w/1000 gals,
Swbd 80 BLW in 11 hrs
Set CIBP at 17,378'
Weber Perf 16,552'-16,570'
Acidized w/1000 gals
Set CIBP at 16,516'
Weber Perf 16,495'-16,501'
Acidized w/1000 gals
Set CIBP at 14,950'
Navajo Perf 14,800'-14,842'
Acidize d w/2000 gals
Navajo Perf 14,862'-14,872'
Flowed 9 MCFG/D
Sqzd
Dakota Perf 13,276'-13,284'
Acidized w/1500 gals (15% HCL)
Fract w/91,300 gals gel water
35,500 propping agent, 45,000 20/40 sd
Dakota Perf 13,120'-13,165'
Acidized w/4000 gals (15% acid)
DST #1: 1.5 hrs, rec 80' GCM,
FP 5575#, SIP (30 min) 330#
DST #2: 1 hr, rec 150' O & GCM, 180' GCSW,
FP 105-165#, SIP (30 min) 1160#
DST #3: 1 hr, , op gas at 43 MCFG/D
rec 180' MCO, 90' oil M & WCO, 90' heavily W & OCM,
FP 28-148#, SIP (30 min) 1662#, HP 2500#
DST #4: 1.5 hr, rec 30' M & GCW, 180' salt water,
FP 38-260#, SIP (30 min) 1570#, HP 2575#
DST #5: 1 hr, rec 20' mud,
FP 20-20#, SIP (30 min) 55#
DST #1: 4 hrs, SI 30 min, rec 974' fluid,
(180' mud, 794' slt GC water)
FP 2435#, SIP 1180#, HP 2340#
DST #2: 2 hrs, rec 90' slt GC fluid,
FP 0-90#, SIP 130#, HP 2740#
DST #3: 2 hrs, rec 150' W & GCM,
FP 85-110#
DST #4: 2 hrs, rec 15' GCM,
FP 0#, SIP 80#
DST #5: 2 hrs, , after 30 min
gauged at rec 25,000 MCFG/D,
FP 105-90#, SIP 435#, HP 5500#
Core #1: Rec 52' siltstone
Core #2: Rec 3.5' granite
Prod. Tests: Dakota Perf 11,874'-11,884'
ACFR: 4,000 gals, 17,700 lbs sand
2 stages: 1,000 gals (7.5% HCL)
3,000 gals (3.0% HCL)
20/40 SD
Dakota Perf 11,934'-11,964'
ACFR: 1500 gals, 23,000 lbs sand
2 stages: 750 gals (7.5% HCL)
750 gals (15% HCL)
20/40 SD
Dakota Perf 11,934'-11,956 and 11,972'-11,984'
Treatment not reported
Mancos Perf 8,398'-8,414'
ACFR: 3500 gals, 44,700 lbs sand
2 stages: 1,500 gals (7.5% HCL)
2,000 gals (3.0% HCL)
20/40 SD
DST #1: Si 1 hr, op 90 min, SI 90 min, rec 110' mud,
FFP 41#, SIP 302-618#
DST #2: Si 1 hr, op 2 hr, rec 155' SGCM,
FP 54-82#, SIP 556-836#, HP 2970#
DST #3: Si 30 min, op 70 min, SI 1 hr, rec 30' mud,
FP 1264-1282#, SIP 1628-1567#, HP 5163-5163#
DST #4: Si 1 hr, op 2 hrs, SI 1 hr, rec 480' WCM,
FP 1852-2160#, SIP 5062-5021#, HP 5977-5935#
DST #5: Si 1 hr, op 2 hrs, SI 1 hr,
rec 2567 GCSW, 4880' wtr, 4200' GCM,
FP 3041-5145#, SIP 5430-5143#, HP 6003-5977#
DST #6: Si 1 hr, op 2 hr, SI 1 hr, rec 90' mud,
FP 2165-2165#, SIP 4066-3353#, HP 6143-6101#
Core #1: Rec 15' sand
Core #2: Rec 20' dolomite
Prod. Tests: Dakota Perfs
10,170'-10,382' (gross)
Acidized, fdbrl fract all zones
Figure 7
Wind River Resources Corporation
Cross Section A-A'
North Hill Creek
Carbon and Uintah Counties, Utah
Geology By:
Black Coral LLC by B. Gunneson
2/17/00

Figure 7

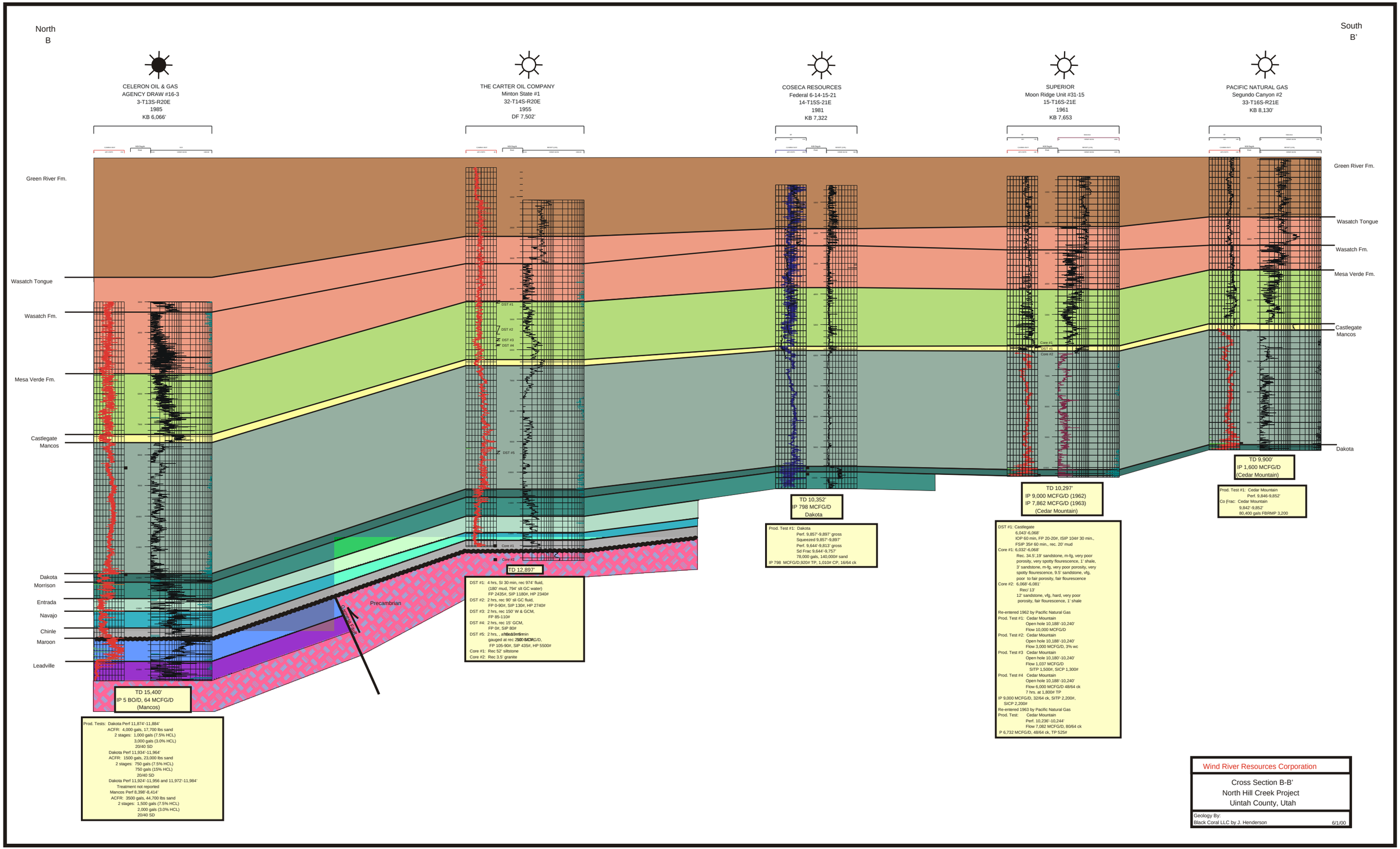

North
B
South
B'
CELERON OIL & GAS
AGENCY DRAW #16-3
3-T13S-R20E
1985
KB 6,066'
THE CARTER OIL COMPANY
Minton State #1
32-T14S-R20E
1955
DF 7,502'
COSECA RESOURCES
Federal 6-14-15-21
14-T15S-21E
1981
KB 7,322
SUPERIOR
Moon Ridge Unit #31-15
15-T16S-21E
1961
KB 7,653
PACIFIC NATURAL GAS
Segundo Canyon #2
33-T16S-R21E
KB 8,130'
Green River Fm.
Wasatch Tongue
Wasatch Fm.
Mesa Verde Fm.
Castlegate
Mancos
Dakota
Morrison
Entrada
Navajo
Chinle
Maroon
Leadville
Precambrian
Gunnison Fault
DST #1
DST #2
DST #3
DST #4
DST #5
Core #1
Core #2
TD 12,897'
TD 15,400'
IP 5 BO/D, 64 MCFG/D
(Mancos)
Prod. Tests: Dakota Perf 11,874'-11,884'
ACFR: 4,000 gals, 17,700 lbs sand
2 stages: 1,000 gals (7.5% HCL)
3,000 gals (3.0% HCL)
20/40 SD
Dakota Perf 11,934'-11,964'
ACFR: 1500 gals, 23,000 lbs sand
2 stages: 750 gals (7.5% HCL)
750 gals (15% HCL)
20/40 SD
Dakota Perf 11,924'-11,956 and 11,972'-11,984'
Treatment not reported
Mancos Perf 8,398'-8,414'
ACFR: 3500 gals, 44,700 lbs sand
2 stages: 1,500 gals (7.5% HCL)
2,000 gals (3.0% HCL)
20/40 SD
DST #1: 4 hrs, SI 30 min, rec 974' fluid,
(180' mud, 794' slt GC water)
FP 243/#, SIP 1180/#, HP 2340/#
DST #2: 2 hrs, rec 90' sli GC fluid,
FP 0-90/#, SIP 130/#, HP 2740/#
DST #3: 2 hrs, rec 150' W & GCM,
FP 85-110/#
DST #4: 2 hrs, rec 15' GCM,
FP 0/#, SIP 80/#
DST #5: 2 hrs, , rec 3.5' GCM
gauged at rec 2500 MCFG/D,
FP 105-90/#, SIP 435/#, HP 5500/#
Core #1: Rec 52' siltstone
Core #2: Rec 3.5' granite
TD 10,352'
IP 798 MCFG/D
Dakota
Prod. Test #1: Dakota
Perf. 9,857'-9,897' gross
Squeezed 9,857'-9,897'
Perf. 9,644'-9,813' gross
Sd Frac 9,644'-9,757'
78,000 gals, 140,000# sand
IP 798 MCFG/D,920# TP, 1,010# CP, 16/64 ck
TD 10,297'
IP 9,000 MCFG/D (1962)
IP 7,862 MCFG/D (1963)
(Cedar Mountain)
DST #1: Castlegate
6,043'-6,068'
IOP 60 min, FP 20-20#, ISIP 104# 30 min.,
FSIP 35# 60 min., rec. 20' mud
Core #1: 6,032'-6,068'
Rec. 34.5',19' sandstone, m-fg, very poor
porosity, very spotty flourescence, 1' shale,
3' sandstone, m-fg, very poor porosity, very
spotty flourescence, 9.5' sandstone, vfg,
poor to fair porosity, fair flourescence
Core #2: 6,068'-6,081'
Rec/ 13'
12' sandstone, vfg, hard, very poor
porosity, fair flourescence, 1' shale
Re-entered 1962 by Pacific Natural Gas
Prod. Test #1: Cedar Mountain
Open hole 10,188'-10,240'
Flow 10,000 MCFG/D
Prod. Test #2: Cedar Mountain
Open hole 10,188'-10,240'
Flow 3,000 MCFG/D, 3% wc
Prod. Test #3 Cedar Mountain
Open hole 10,180'-10,240'
Flow 1,037 MCFG/D
SITP 1,500#, SICP 1,300#
Prod. Test #4 Cedar Mountain
Open hole 10,188'-10,240'
Flow 6,000 MCFG/D 48/64 ck
7 hrs. at 1,800# TP
IP 9,000 MCFG/D, 32/64 ck, SITP 2,200#,
SICP 2,200#
Re-entered 1963 by Pacific Natural Gas
Prod. Test: Cedar Mountain
Perf. 10,236'-10,244'
Flow 7,082 MCFG/D, 80/64 ck
P 6,732 MCFG/D, 48/64 ck, TP 525#
TD 9,900'
IP 1,600 MCFG/D
(Cedar Mountain)
Prod. Test #1: Cedar Mountain
Perf. 9,846-9,852'
Co Frac: Cedar Mountain
9,842'-9,852'
80,400 gals FBRMP 3,200
Wind River Resources Corporation
Cross Section B-B'
North Hill Creek Project
Uintah County, Utah
Geology By:
Black Coral LLC by J. Henderson
6/1/00

Figure 8

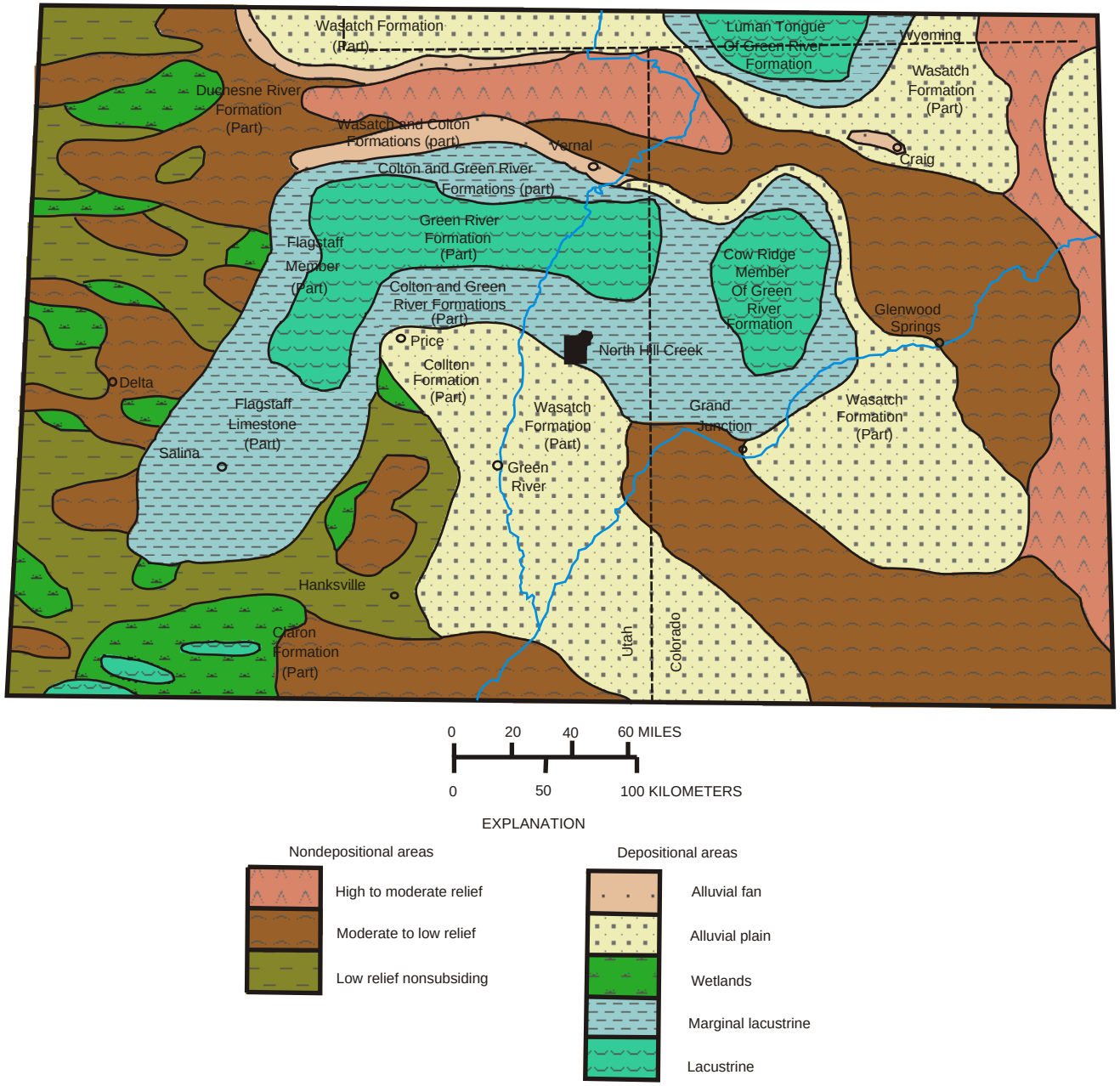


Figure9: Paleogeographic reconstruction during the early Eocene (Modified from Franczyk et al. 1992).

Wind River Resources Corporation

Figure 9

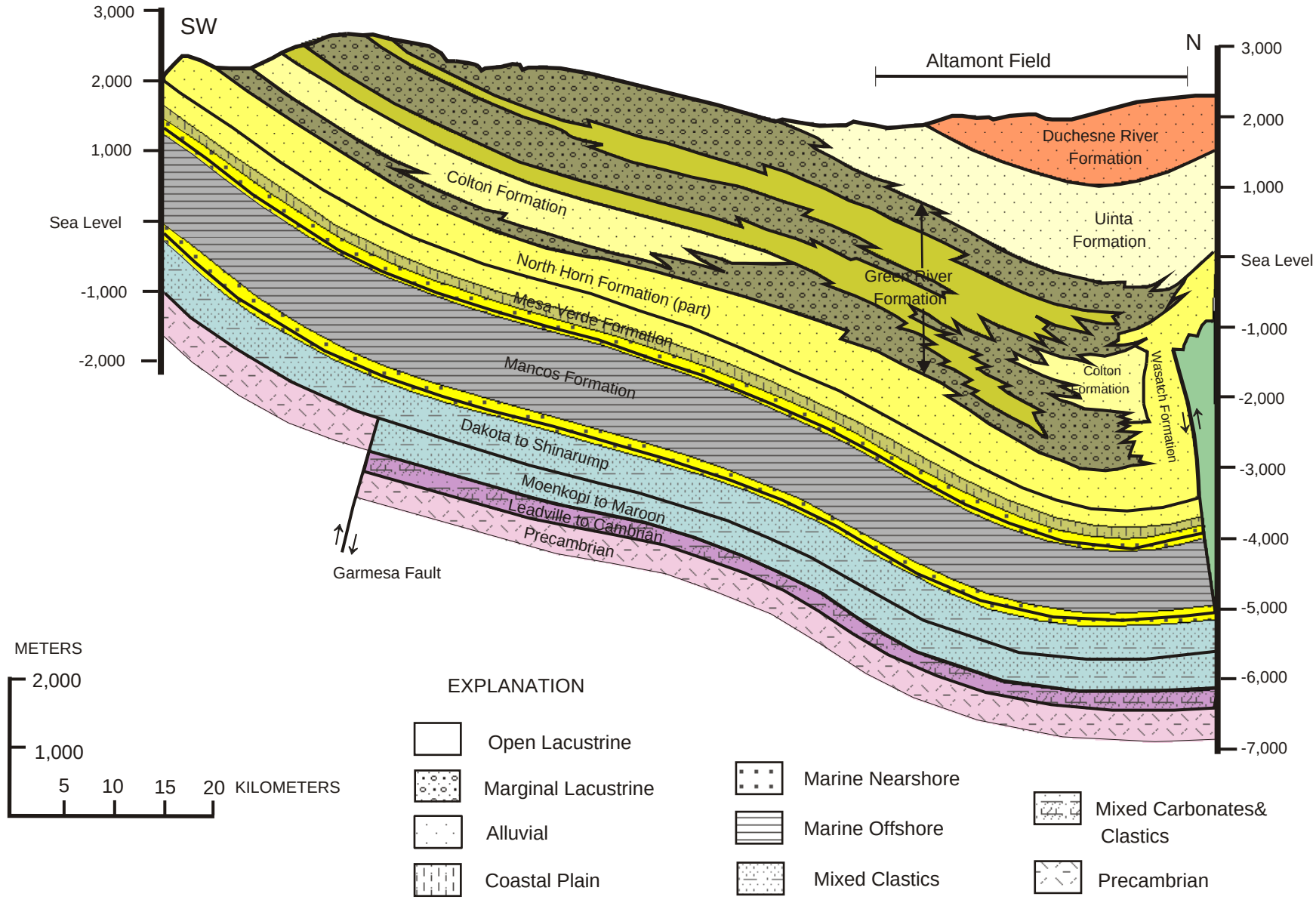
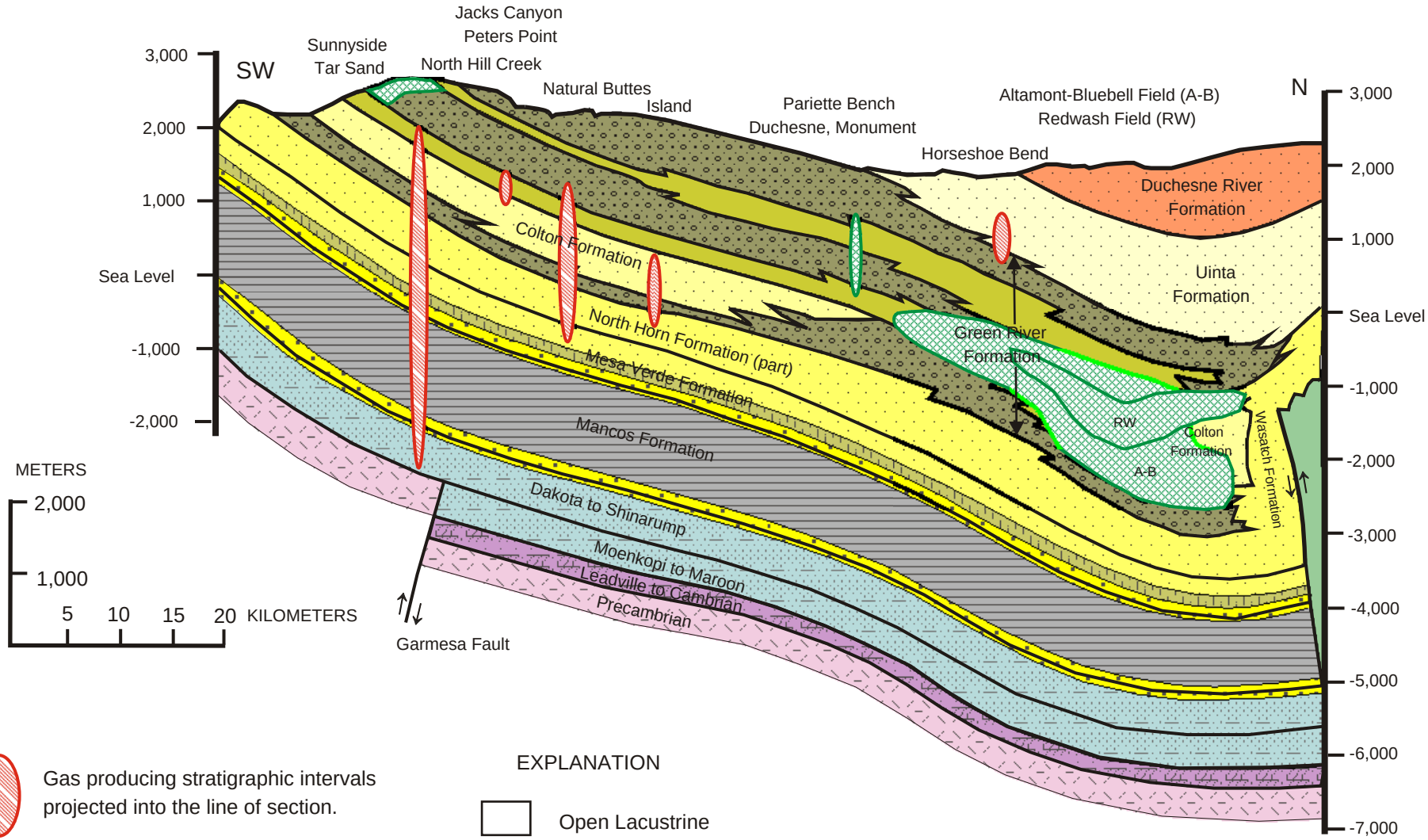


Figure10: Lithologic cross section through the central part of the Uinta Basin (Modified from Fouch-1975 and Stone-1977).

Wind River Resources Corporation

Figure 10



Gas producing stratigraphic intervals projected into the line of section.

Oil and gas producing stratigraphic intervals projected into the line of section.

Note that the projected producing intervals may not be at the same drilling depths where they produce.

EXPLANATION

- Open Lacustrine
- Marginal Lacustrine
- Alluvial
- Coastal Plain
- Marine Nearshore
- Marine Offshore
- Mixed Clastics
- Mixed Carbonates& Clastics
- Precambrian

Figure 11 (Modified from Fouch-1975 and Stone-1977).

Wind River Resources Corporation

Figure 11

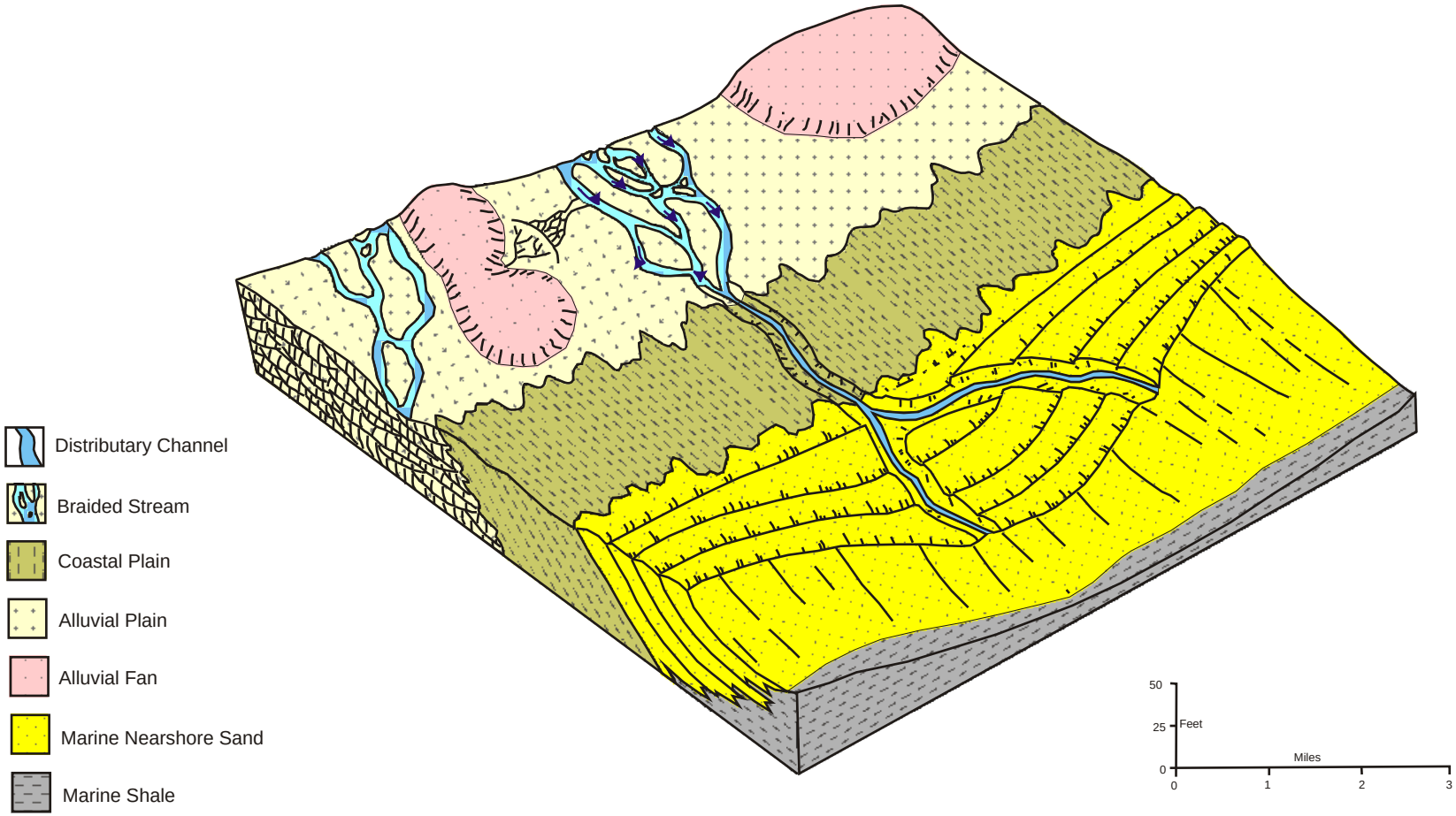


Figure 12

Figure 12: Three dimensional depositional model. (Modified from Moretti et al., 1992).

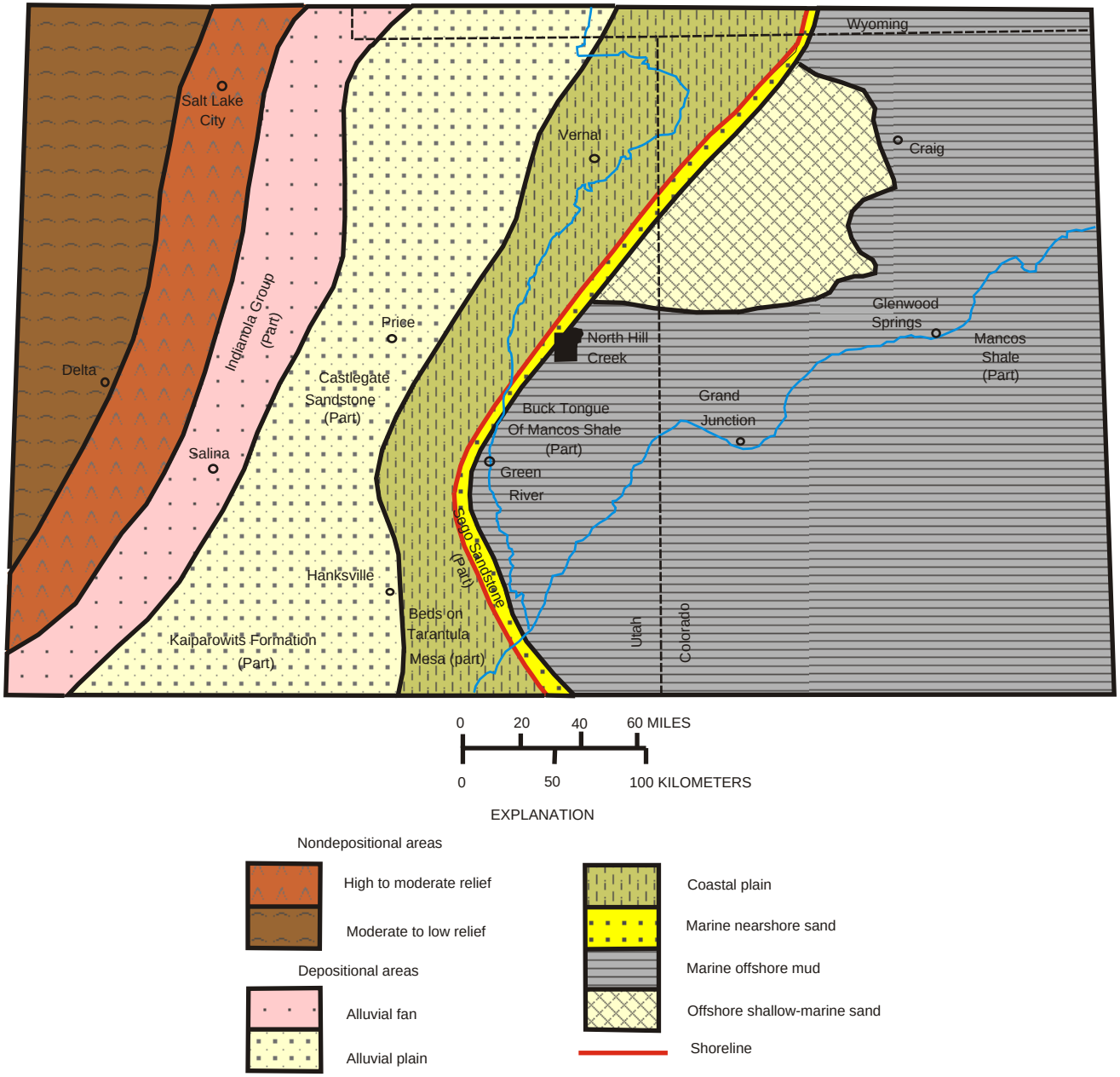


Figure 13: Paleogeographic reconstruction at maximum transgression during the middle late Campanian Baculites perplexus faunal zone (Modified from Franzyk et al. 1992).

Wind River Resources Corporation

Figure 13

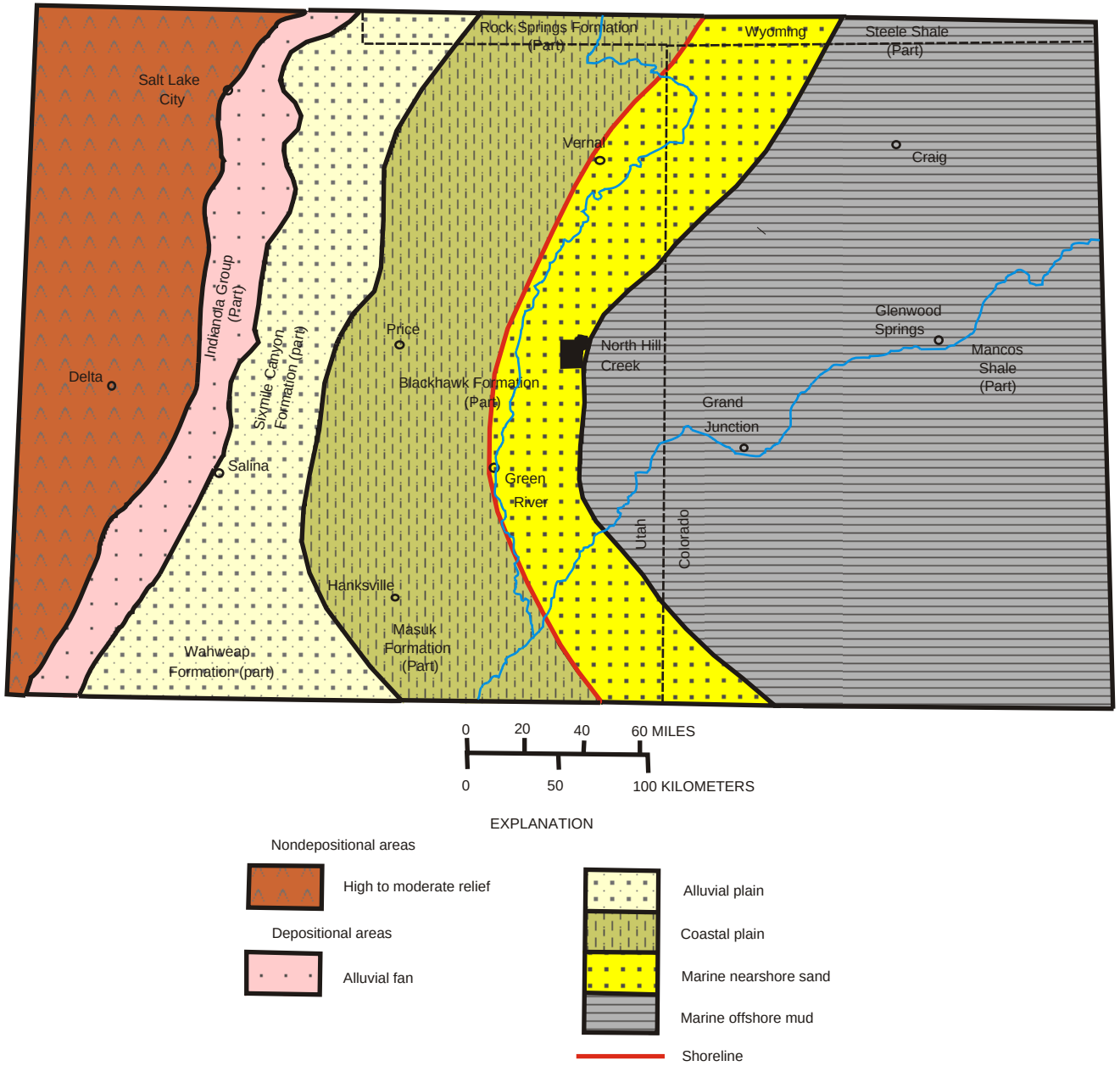


Figure 14: Paleogeographic reconstruction during the late early Campanian Baculites mclearni faunal zone (Modified from Franczyk et al., 1992)

Wind River Resources Corporation

Figure 14

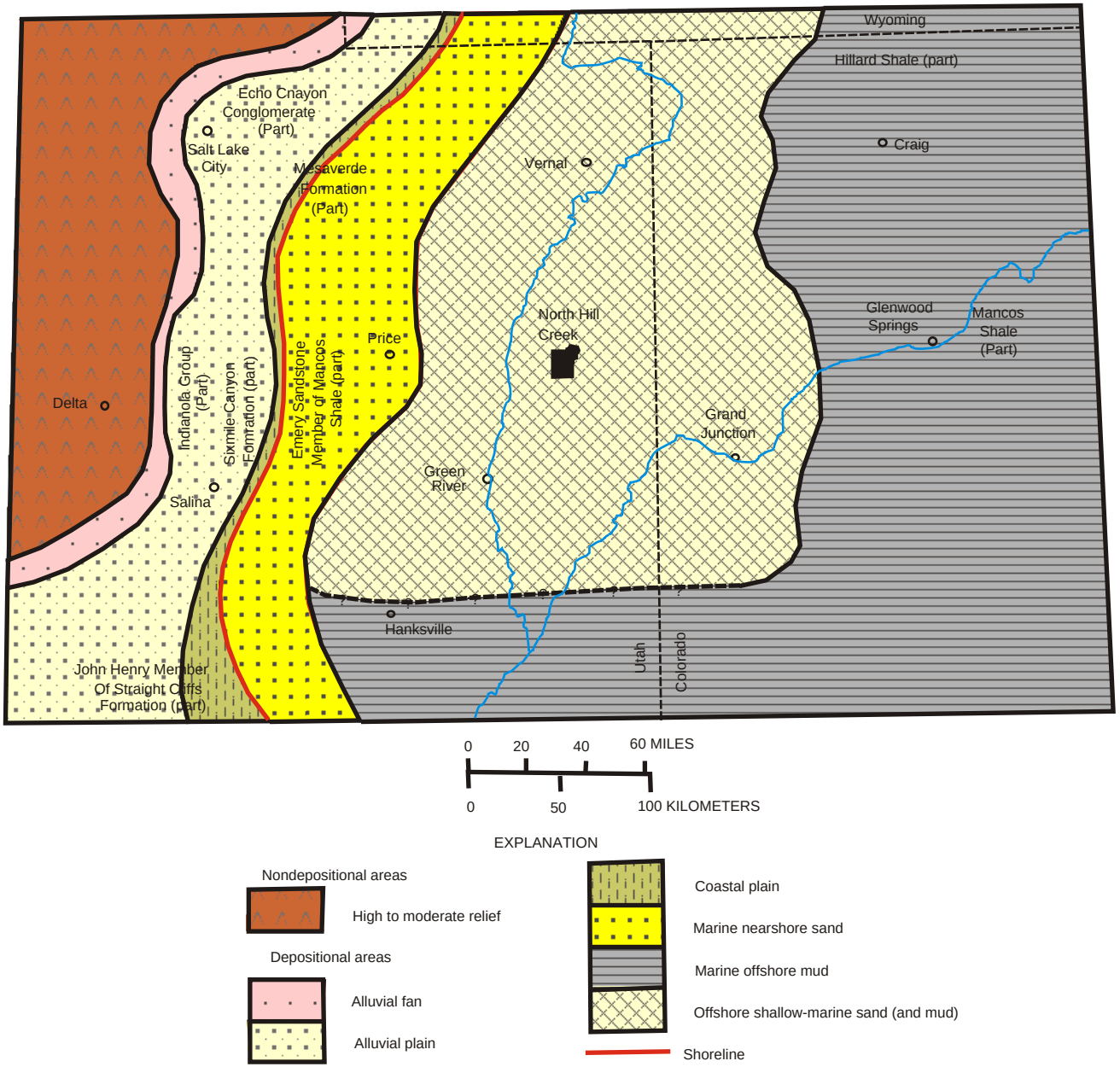


Figure 15: Paleogeographic reconstruction during the late Santonian Desmoscaphites bassleri faunal zone (Modified from Franczyk et al., 1992)

Wind River Resources Corporation

Figure 15

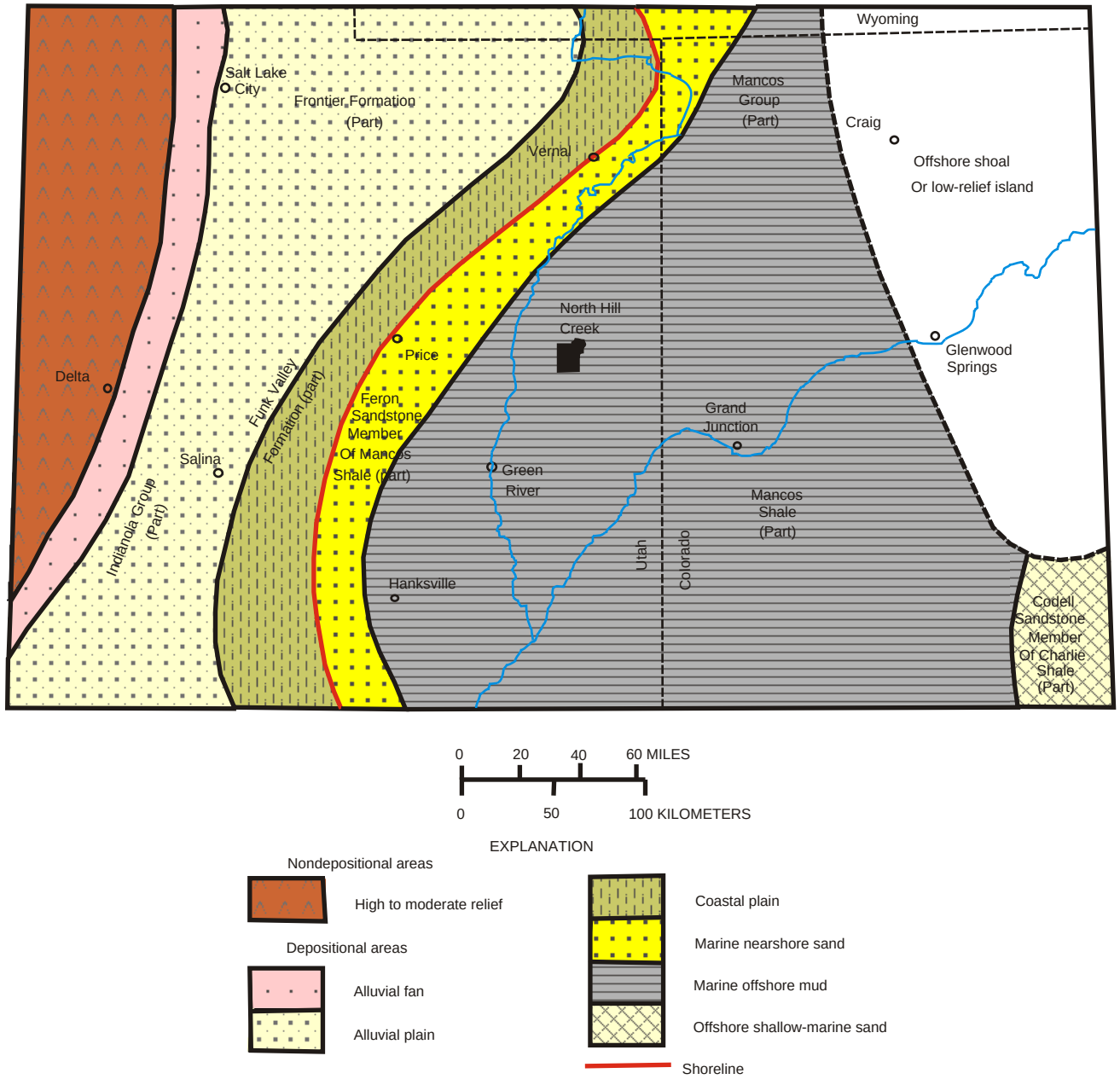


Figure 16: Paleogeographic reconstruction at maximum extent of regression during the late middle Turonian Prionocyclus hyatti faunal zone (Modified from Franzyk et al. 1992). Unpatterned area may be an offshore shoal or low relief island; in this area rocks of this age are absent owing to pre-Late Turonian erosion.

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Figure 16

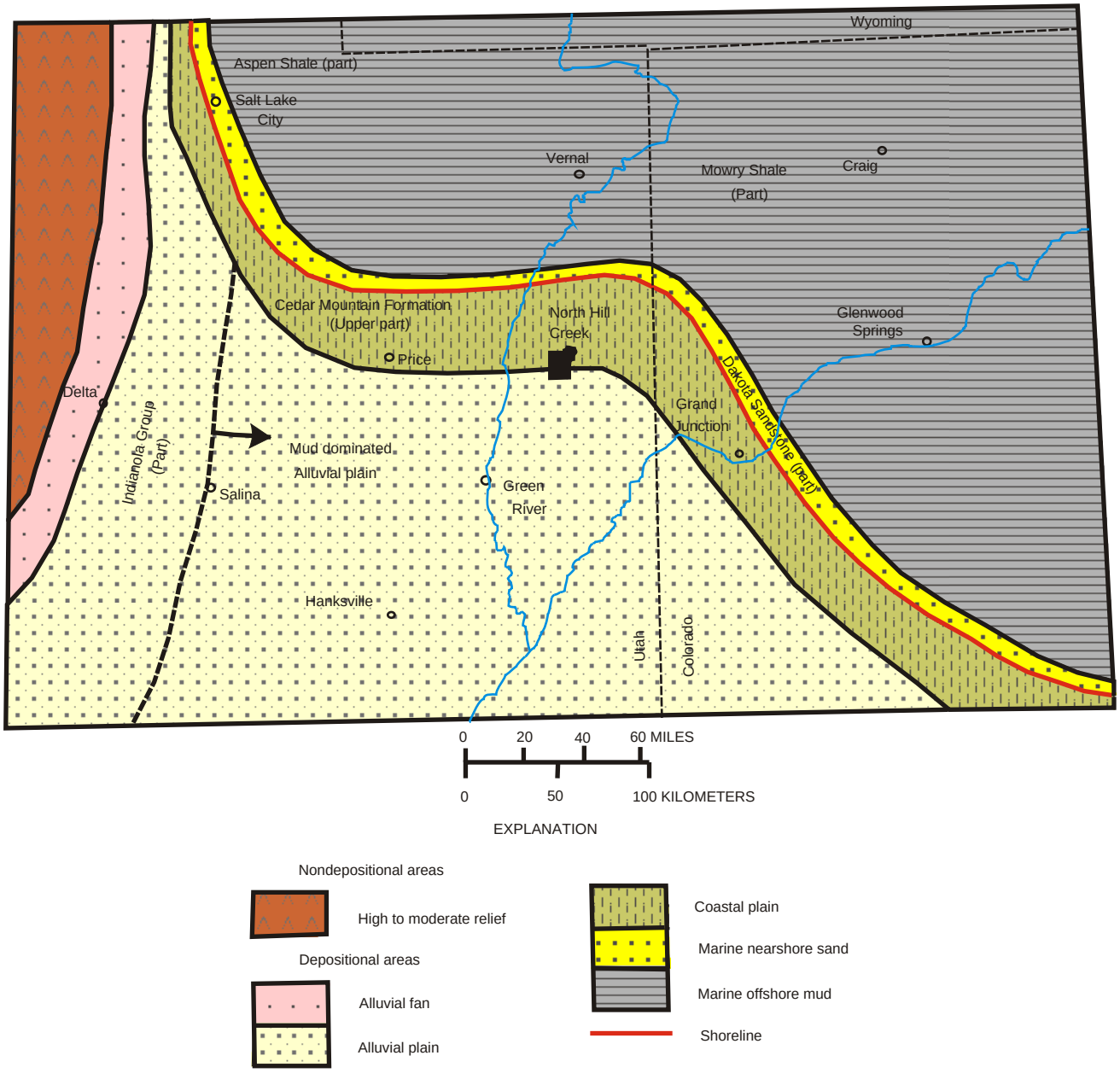

Figure 17: Paleogeographic reconstruction during the early Cenomanian Neogastroplites americanus faunal zone (Modified from Franzyk et al. 1992).

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Figure 17

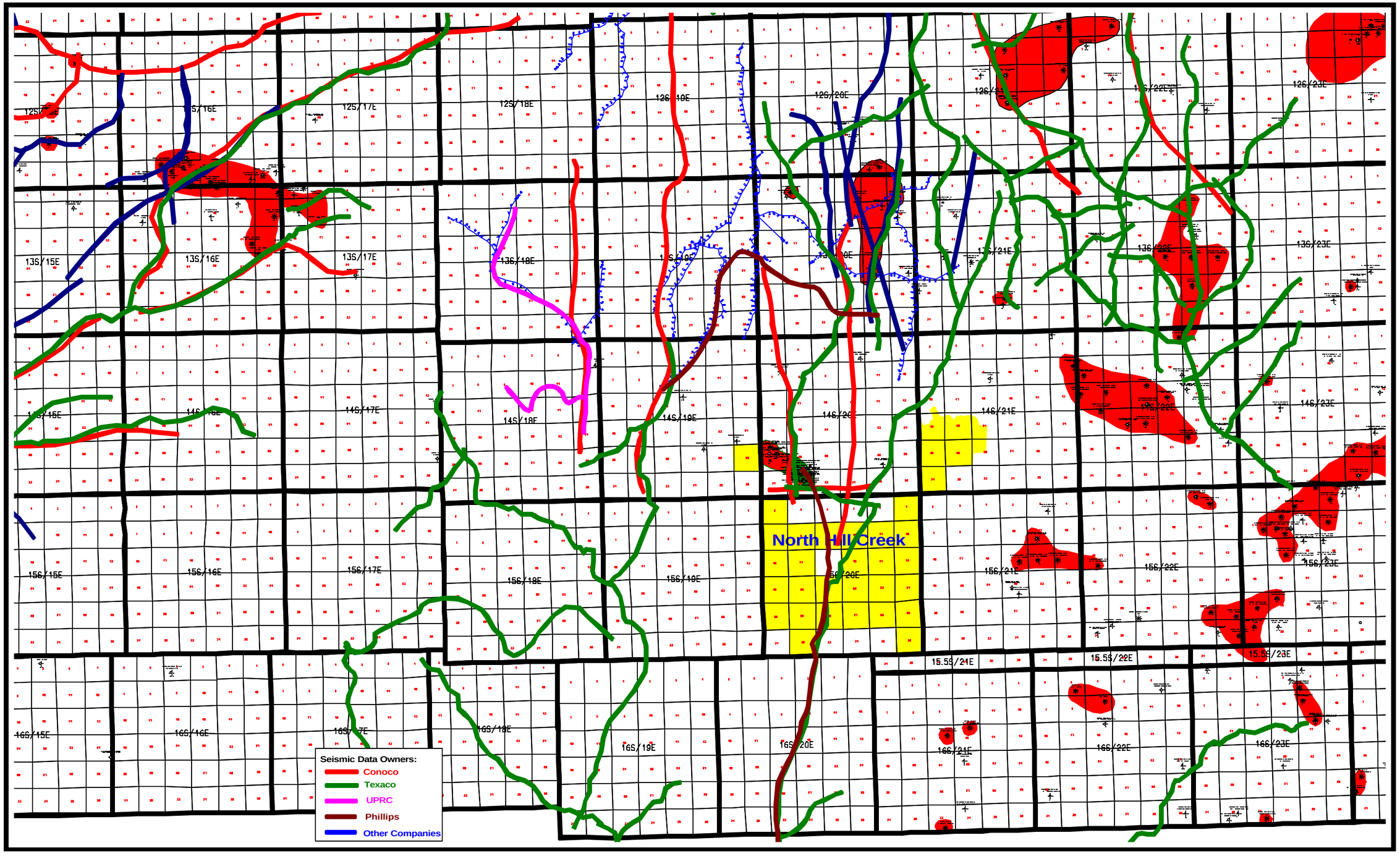

Figure 18: North Hill Creek- Seismic Stick Map (Data Available)

Wind River Resources Corporation

Figure 18

Project: NORTH HILL CREEK 3D
Design: All - PRELIM
*** Survey Dated 12-04-02 ***
Client: [illegible]
Area: [illegible]

Providing Maximum Fold of 108 channels

PLI : 880 ft SLI : 1320 ft
PPI : 220 ft SPI : 220 ft

North American Datum 1927
Utah Central Zone

Cell Size
110.0 x 110.0 M
Binning Method: CMP

- Source
- Detector
- Cutout
- Hydrology
- Railroads
- Roads
- Section Lines
- Township Lines

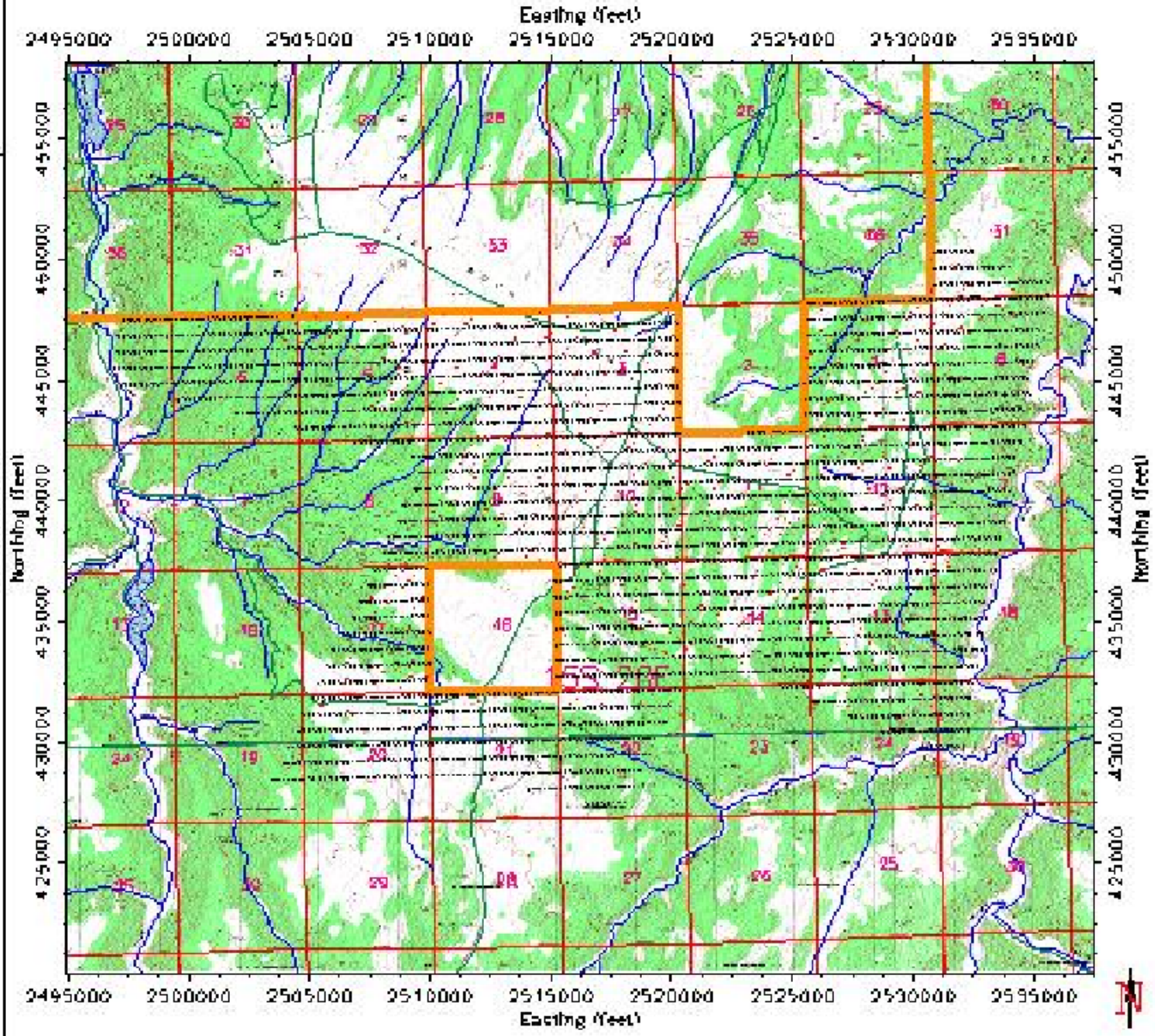

FIGURE 19

Design Compliments of
WesternGeco