CRIPPEN ACRES LIMITED

GEOLOGY OF THE FORKS AND CHOICELAND SITES, SASKATCHEWAN

Report 0039-001 November 13, 1979

E. A. Christiansen Consulting Ltd.

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November 13, 1979

Crippen Acres Limited
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Attention: Mr. J.B. Milne

Dear Mr. Milne:

Enclosed is a copy of the "Geology of the Forks and Choiceland sites, Saskatchewan". If you have any queries, please contact me.

Sincerely yours,

E.A. Christiansen

SUMMARY

The Saskatchewan River Valley at both the Forks and Choiceland sites is developed entirely in glacial deposits which overly marine silts and clays of the Upper Cretaceous Ashville Group and Lea Park Formation and Upper Colorado Group. The lower part of the drift, in which any proposed dam would be constructed, is composed of tills and varying amounts of stratified drift. This material is overlain by glacial lake silt and clay and deltaic sand and gravel deposited in glacial Lake Saskatchewan during the last deglaciation.

Three testholes are proposed for each of the Forks and Choiceland sites- one on each upland to the north and south of the valley and one on the valley floor. At least one testhole on the upland of each site should be drilled to a bedrock marker bed. The two remaining testholes at each site should be drilled to undisturbed bedrock. Test drilling should not be terminated in the drift until more is known about the stratigraphy of the glacial deposits at these sites.

LIMITATIONS

The Saskatchewan Research Council (SRC) geological logs are based on sidehole cores, cutting samples, and electric logs and are believed to represent the geology at a specific site at the time studied. The other geological logs supplied by the Saskatchewan Department of Highways and Transportation (SDH) and the Family Farm Improvement Branch (FFIB) are based on cutting sample descriptions and electric logs only which makes this information less reliable. The oil and mining company information is in the form of electric logs only and was used primarily for determining the bedrock surface and bedrock deposits. The contacts between glacial deposits, determined from geological logs, were drawn through the most likely depths in these electric logs.

Straight lines drawn between adjacent logs in cross sections are to guide the eye from contacts in one log to another and do not necessarily represent the actual contacts between geological units nor do they necessarily imply the nature of these units is the same as at the actual sites where the information was obtained . Curved lines in cross sections represent available geological models that best fit the geological information available at the time the cross sections were drawn. These lines do not necessarily represent actual contacts between geological units nor do they necessarily imply the nature of these units is the same as at the sites where the information was obtained. The degree of confidence of such geological interpretations depends on the quality and quanity of information and on the complexity of the geology.

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1. INTRODUCTION

1.1 Terms of Reference

This investigation was commissioned by a letter, September 14, 1979, from Mr. J.B. Milne and by a telephone conversation, September 18, 1979, with Mr. John Macpherson both of Crippen Acres Limited. The commission includes the location of available information on the geology of the Forks and Choiceland sites, the preparation of cross sections, and suggestions for further exploratory testholes at these sites. During the telephone conversation with Mr. Macpherson on September 18, authorization to prepare a cross section at Gronlid Ferry was also given.

1.2 Location

The locations of the Forks and Choiceland sites and cross sections (Drawings 0039-001-02, 03) and the cross section at Gronlid Ferry (Drawing 0039-001-05) are shown in Drawings 0039-001-01, and 04).

1.3 Previous Work

The geology of the bedrock and glacial deposits of the Forks and Choiceland sites was investigated by Christiansen (1973) who prepared a map showing the bedrock geology and topography and who divided the glacial deposits into mainly till, Surficial Silt and Clay, and Surficial Sand and Silt.

The history of the last deglaciation of southern Saskatchewan, including the Forks and Choiceland sites, was prepared by Christiansen (1979). This publication deals with the history and origin of the glacial lake sediments which cover the uplands at these sites.

The geology of the bedrock and drift between Cole Rapids and Nipawin is shown in a cross section (E.A. Christiansen Consulting Ltd., 1979) which has been revised for the purpose of this report (Drawing 0039-001-06).

Geological logs were obtained from the Saskatchewan Research Council (SRC), Family Farm Improvement Branch (FFIB), Saskatchewan Department of Highways and Transportation (SDH), and oil and mining companies.

1.4 Present Study

Regional cross sections through the Forks and Choiceland sites (Drawings 0039-001-02,03) and a more detailed cross section at Gronlid Ferry were constructed. The purpose of the regional cross sections is to provide a geological framework for the pre-feasibility test drilling and to propose the location of testholes to be drilled at these sites. Because the cross section of Gronlid Ferry is close to the Choiceland site, it should provide information relative to this site; consequently, it was added to this report.

2. BEDROCK STRATIGRAPHY

The bedrock stratigraphy of the Forks and Choiceland sites is shown in Drawings 0039-001-02 and 03. For further comments on the bedrock geology, the reader is referred to Report 0035-001 (E.A. Christiansen Consulting Ltd., 1979).

3. BEDROCK SURFACE TOPOGRAPHY

The bedrock surface in the Forks and Choiceland areas is an erosional surface formed presumably by glacial erosion (E.A. Christiansen Consulting Ltd., 1979). The bedrock surface is well below the present day surface at both the Forks and Choiceland sites (Drawings 0039-001-02,03).

4. GLACIAL STRATIGRAPHY

4.1 Introduction

The drift in cross sections AA' and BB' (Drawings 0039-001-02,03) is divided into Glacial Deposits and Glacial Lake Sediments.

4.2 Glacial Deposits

The nature, origin, and age of the Glacial Deposits in the Forks and Choiceland areas were described by E.A. Christiansen Consulting Ltd. (1979). In that report the Glacial Deposits were divided into stratigraphic units which were extended to these areas from the Saskatchewan reference section.

In cross sections AA' and BB' (Drawings 0039-001-02,03), there is not sufficient information to use formal stratigraphic names. In cross section AA', drawn through the Fork site (Drawing 0039-001-02), the Glacial Deposits are undifferentiated till with lesser amounts of stratified drift. In cross section BB',drawn through the Choiceland site (Drawing 0039-001-03), the Glacial Deposits are divided into a lower unit of predominantly till and an overlying unit of till and sand. Further test drilling at the Forks and Choiceland sites should enable the establishment of formal stratigraphic units at these sites.

4.3 Glacial Lake Sediments

4.3.1 Introduction

The Glacial Lake Sediments in the Forks and Choiceland sites are composed of Surficial Silt and Clay and Surficial Sand and Silt (Drawings 0039-001-02,03,05,06).

4.3.2 Surficial Silt and Clay

The Surficial Silt and Clay was deposited in glacial Lake Saskatchewan at the Forks and Choiceland sites when the lake stood as shown in Phase 7 (Christiansen, 1979, p.929, in back). These sediments are about 50 (15m) feet at the Forks site and about 70 (21m) feet at the Choiceland site.

4.3.3 Surficial Sand and Silt

The Surficial Sand and Silt was deposited in a delta at the Forks and Choiceland sites which formed where the North and South Saskatchewan Rivers entered Lake Saskatchewan between Phases 7 and 8 (Christiansen 1979, p.929-930). The Surficial Sand and Silt is believed to be about 50 (15m) feet thick at the Forks site and about 100 (30m) feet at the Choiceland site.

5. RECENT STRATIGRAPHY

5.1 Alluvium

The wide flood plain of the Saskatchewan River at Gronlid Ferry is underlain by 10 (3m) to 40 (12m) feet of alluvial sand and gravel. The flood plain appears to be "rock defended" where the river has widened by eroding the more erodible surficial stratified drift rather than deepening by eroding the less erodible till.

6. PROPOSED DRILLING PROGRAM

Three testholes are proposed for each of the Forks and Choiceland sites for this pre-feasibility study. They include one on the upland to the north and south of the Saskatchewan River Valley and one on the valley floor. At least one testhole should be drilled to a marker bed (Base of Second White Speckled Shale or top of Swan River Group). The other two testholes should be drilled at least to bedrock. If there is any abnormality in the nature or thickness of the drift or bedrock, the testhole should be drilled to a marker bed. It is not recommended to try and mark on a marker bed in the drift until the glacial stratigraphy of the site has been established. If the Swan River Group is penetrated by testholes on the valley floor, flowing hole conditions should be expected.

7. LITERATURE CITED

Christiansen, E.A. 1973. Geology and groundwater resources of the Prince Albert area (73H), Saskatchewan. Saskatchewan Research Council, Geology Division, Map 15.

Christiansen, E.A. 1979. The Wisconsinan deglaciation of southern Saskatchewan and adjacent area. Canadian Journal of Earth Sciences, v. 16, p.913-938.

E.A. Christiansen Consulting Ltd. 1979. Geology of the Nipawin dam site (Axis No. 5) area and a proposal for additional studies. Report 0035-001 for Crippen Acres Limited.

Diamonds are forever

❑ Which is good because call on Star mine still a year away

By Cassandra Kyle
of The StarPhoenix

It's been more than 20 years since something so special was discovered in the Fort a la Corne forest of central Saskatchewan that the work to understand its unique features is still underway today.

In 1989, the first diamond-bearing kimberlite was found in the forest, about 65 kilometres east of the city of Prince Albert. Seven years later, the Star kimberlite was discovered.

Now, Saskatoon-based Shore Gold Inc., which owns the Star diamond project and the majority interest in the adjacent Orion South kimberlite, is one year away from deciding whether to mine the gems buried about 100 metres underground.

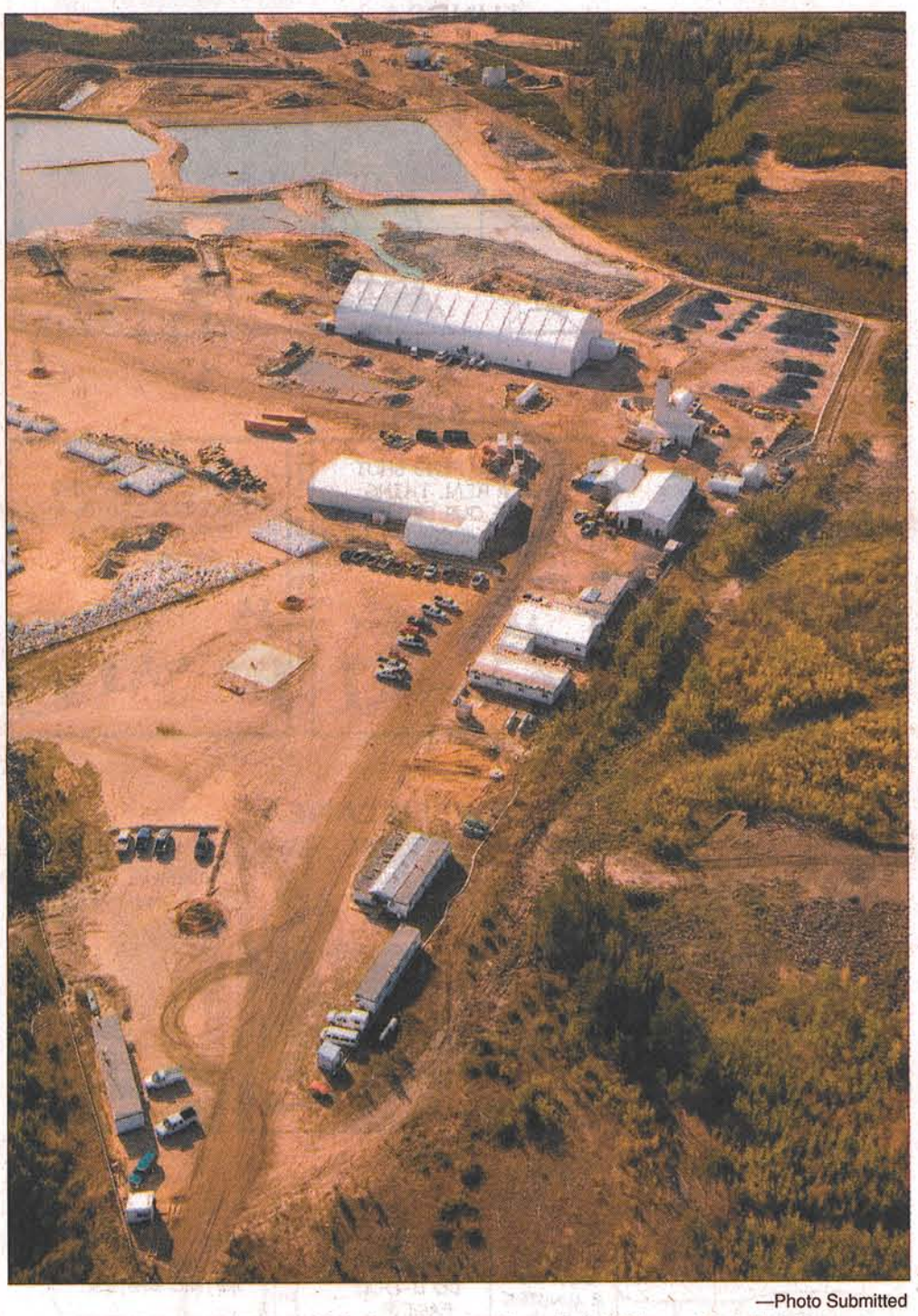
The company's preference is clear.

"We've shown that a world-class diamond mine is feasible in Saskatchewan," said George Read, Shore Gold's senior vice-president of exploration and development.

"Certainly the makings are all there. We now have to put this together, get the final work done, get all the decisions made in order to make this happen."

▼ STAR-ORION SOUTH BY NUMBERS

❑ 7.9 — Billion dollars worth of diamonds estimated to be at the site
❑ 35 — Million carats of diamonds expected to be mined
❑ 20 — Years minimum of anticipated mine life
❑ 40,000 — Tonnes of ore to be processed at the site daily
❑ 4.20 — Dollars per processed tonnes to be paid in taxes
❑ 2.5 — Billion dollars in estimated construction and operation costs
❑ 500 — Workers during both the construction and operation phases of the mine
❑ 100 — Carat diamonds expected to be found at the site
❑ 50 — Carats: The size of the two largest diamonds found so far (fragments of larger stones)
❑ 12 — Months before Shore Gold anticipates a production decision for the project



—Photo Submitted

This June 2008 aerial shot shows the site of Shore Gold Inc.'s Star diamond project northeast of Prince Albert

$8 billion in the ground

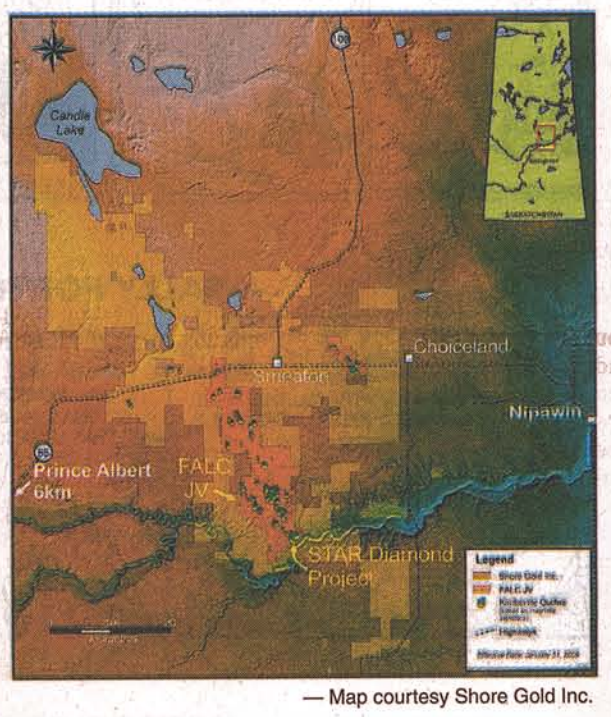
Momentum is building for the development of the Star-Orion South diamond project. The company believes construction could start as early as 2011 on two open-pit mines — one at each deposit — and a joint processing facility that would process up to 40,000 tonnes of ore per day, making it the largest such plant on the planet.

Shore Gold revealed in a recently released prefeasibility study it expects the cost to build and operate the mine over its lifespan — anticipated to be a minimum of 20 years — would be $2.5 billion.

Read says the construction phase of the project would employ some 500 people and, when the mine starts production in 2016, employ some 500 more.

The study shows the site could produce 35 million carats over its lifespan — and at an average price of $226 per carat, that means there's nearly $8 billion in the ground at Star-Orion South.

"The two really favourable factors of the project is that the diamonds are attractive and valuable in that the average price for the diamonds is essentially three times the world average," Read said in a recent interview.



— Map courtesy Shore Gold Inc.

Environment study needed

But a mine at the site isn't a done deal. During the next 12 months, the company plans to complete additional geological testing and submit its environmental impact statement (EIS) to the provincial government for approval.

Read said Shore Gold is taking steps to ensure the diamond mine — if it comes into production — will leave as minimal a footprint as possible on the environment. The mine site, he said, takes up two to three per cent of the total area of the forest.

"You must remember that the forest is an island forest in a sea of farmland and it only exists because the land was too infertile for agriculture," he said.

The senior executive said the site's close proximity to the provincial electricity grid will help the company reduce a reliance on fossil fuels at the site. Only a small fleet of diesel trucks, Read explained, will be used to move ore from the open pits — which are about two kilometres apart — to the processing plant, which would run on electricity.

In addition to the nearby energy source, Read said a regional workforce and quick access to provincial highways — the closest is about 20 kilometres from the site — helps make the case for operating a diamond mine at Star-Orion South.

"We can drive a pickup truck to and from the site 365 days of the year," he said. "We also have the potential for a labour source. There are people who live in the district that are familiar with mining and certainly that is another advantage."

Region could benefit

It's not just the company that's excited about the potential for a billion-dollar diamond mine. The north-central region of the province would be the recipient of huge economic benefits if Shore Gold moves ahead with the project, says economic development officer Jonathon Theaker.

"If it were to go ahead, it would mean jobs for us and investment in our community," said Theaker, who works out of the Prince Albert-based North Central Economic Region development office.

He added indirect jobs providing retail, food, accommodation, transportation, security and technical services to the mine would also be created.

While the region isn't relying on the development of the Star-Orion South project for economic growth, Theaker said the overall impact on the region of 70,000 people would be positive.

He says the area is already working ahead to ensure there's enough infrastructure, supplies and skilled workers available to service the direct and indirect demands that would naturally come with such a large industrial worksite.

—SP Photo by Richard Marjan

George Read at Shore Gold headquarters in Saskatoon with a picture taken 235 metres down in the Star kimberlite in 2004

Read said he believes the province, through its experience with potash and uranium mining, is ready to add diamonds to its repertoire.

"I am confident that Saskatchewan can also contemplate being a major diamond producer in the future," he said.

The company is assessing several options to finance the project, including equity and debt financing, partnerships with larger companies and alliances with diamond merchants.

While it remains to be seen what the final outcome for the ancient kimberlites in the Fort a la Corne forest will be, Shore Gold believes the best option for the hidden gems will be to bring them to the surface and send them around the world.

"I think the diamonds will be fantastic. I think it will be a huge strength for Saskatchewan," he said.

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Growth to hit 3.6 per cent: bank

By Bruce Johnstone
Saskatchewan News Network

REGINA — Saskatchewan's economy is set to grow by 3.6 per cent in 2010, thanks to improved capital investment, increased agricultural output and rising commodity prices, Canada's largest bank says.

Only Newfoundland and Labrador, at 4.1 per cent, is expected to top Saskatchewan in real gross domestic product (GDP) growth among the 10 provinces this year, RBC Economics said in its latest forecast released Thursday.

The forecasted growth of 3.6 per cent is slightly lower than the nation-leading 3.9 per cent RBC forecast in December, but a vast improvement over the three per cent decline the province posted in 2009.

"(The lower growth forecast) is partly to reflect that there was less momentum than we anticipated entering 2010," said Robert Hogue, senior economist with RBC in Toronto, adding "2009 turned out to be much weaker than we had forecast before."

In December, RBC forecast the provincial economy would contract by 1.6 per cent in 2009 due to falling commodity prices, particularly for potash, and a decline in grain production.

However, the outlook is much brighter for Saskatchewan this year. Growth in both the U.S. and emerging economies will boost natural resource commodity prices and lead to a recovery in capital spending, the report said.

A recently released Statistics Canada private and public investment intentions survey projected an increase in capital spending of 5.5 per cent this year to $12.9 billion, led by a sharp increase in government stimulus spending and a more moderate rise in private-sector investment.

While the projected capital spending is well above the 2.8 per cent decline posted in 2009, it's slightly less than RBC was forecasting in December.

Economic growth will be fuelled by an expected strengthening in prices for potash, oil, natural gas and grains. Potash prices and production will slowly return to more normal levels as fertilizer demand picks up and potash prices recover in 2010.

Oil and natural gas prices are strengthening, which should boost exploration and production this year. Agricultural production is also forecast to increase with the return of normal weather conditions.

This development should result in Saskatchewan achieving the highest economic growth rate among all provinces in 2011 at 4.6 per cent, the report said.

(REGINA LEADER-POST)

Potash Corp. rebounds

TORONTO (CNS) — Potash Corp. of Saskatchewan Inc. dramatically improved its first-quarter earnings guidance Thursday.

The company said a sharp rebound in potash demand will help it earn between $1.30 and $1.50 a share. The new estimate is way above the range of the 70 cents to $1 guidance it gave in late January.

"Strong farmer returns, a depleted distributor pipeline and the agronomic need to replace soil nutrients have kick-started a potash rebound from 2009 lows," Bill Doyle, PotashCorp president and chief executive, said in a statement.

When the fertilizer giant last gave guidance on Jan. 28, analysts said it was overly cautious and the stock was sold off. But it came after a year when Doyle was burned by being overly optimistic.

At the beginning of 2009, the outspoken chief executive predicted the company would earn between $10 US and $12 US a share in 2009, in line with its record results of 2008.

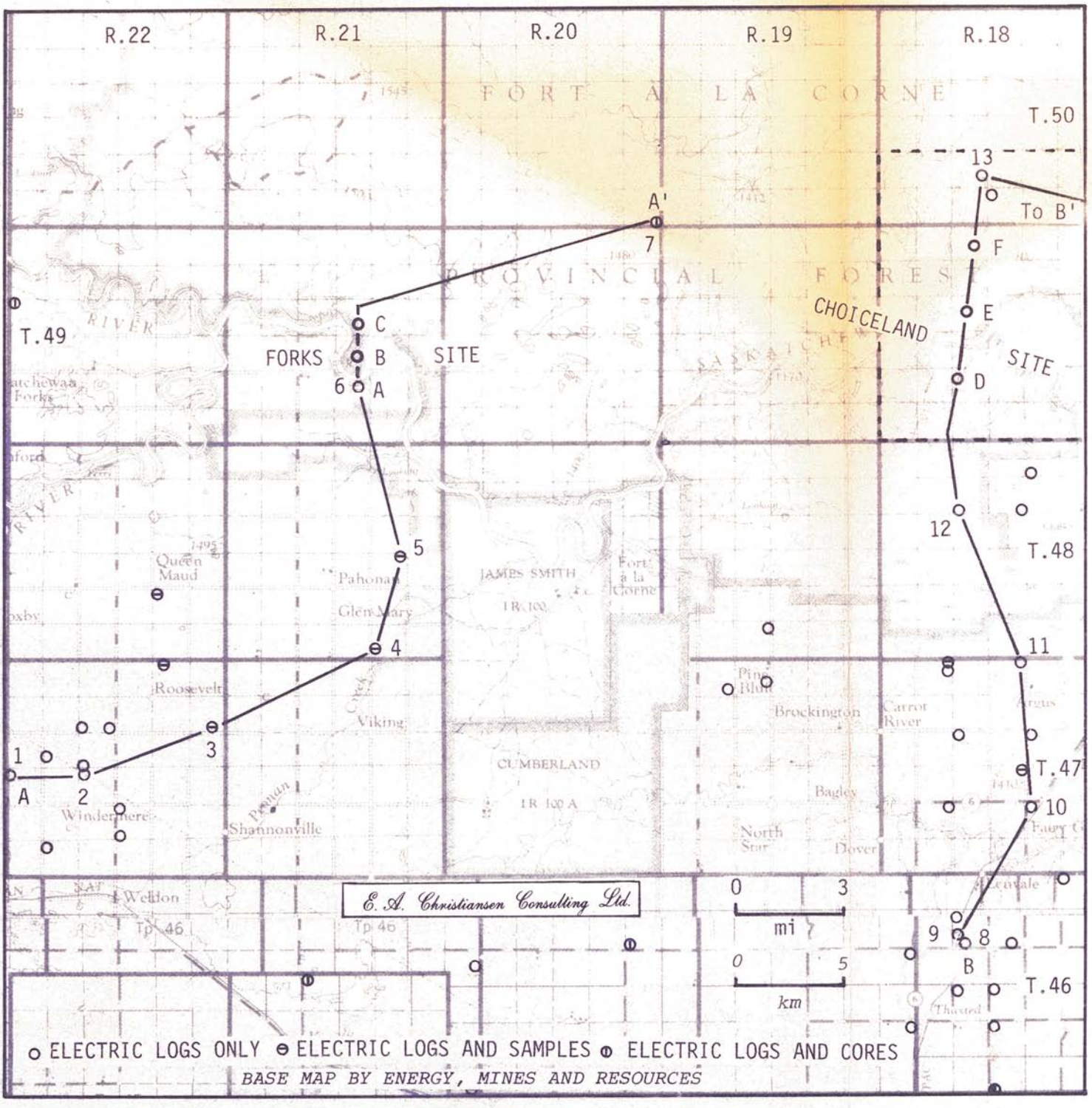
Instead, PotashCorp reported annual earnings of $3.25 US a share, or less than one-third of its initial projection, and sales volumes were the lowest in its history as a public company.

Recession-wary farmers had applied less fertilizer to their crops and the potash companies could not keep prices from falling, no matter how many millions of tonnes of supply they yanked from the market.

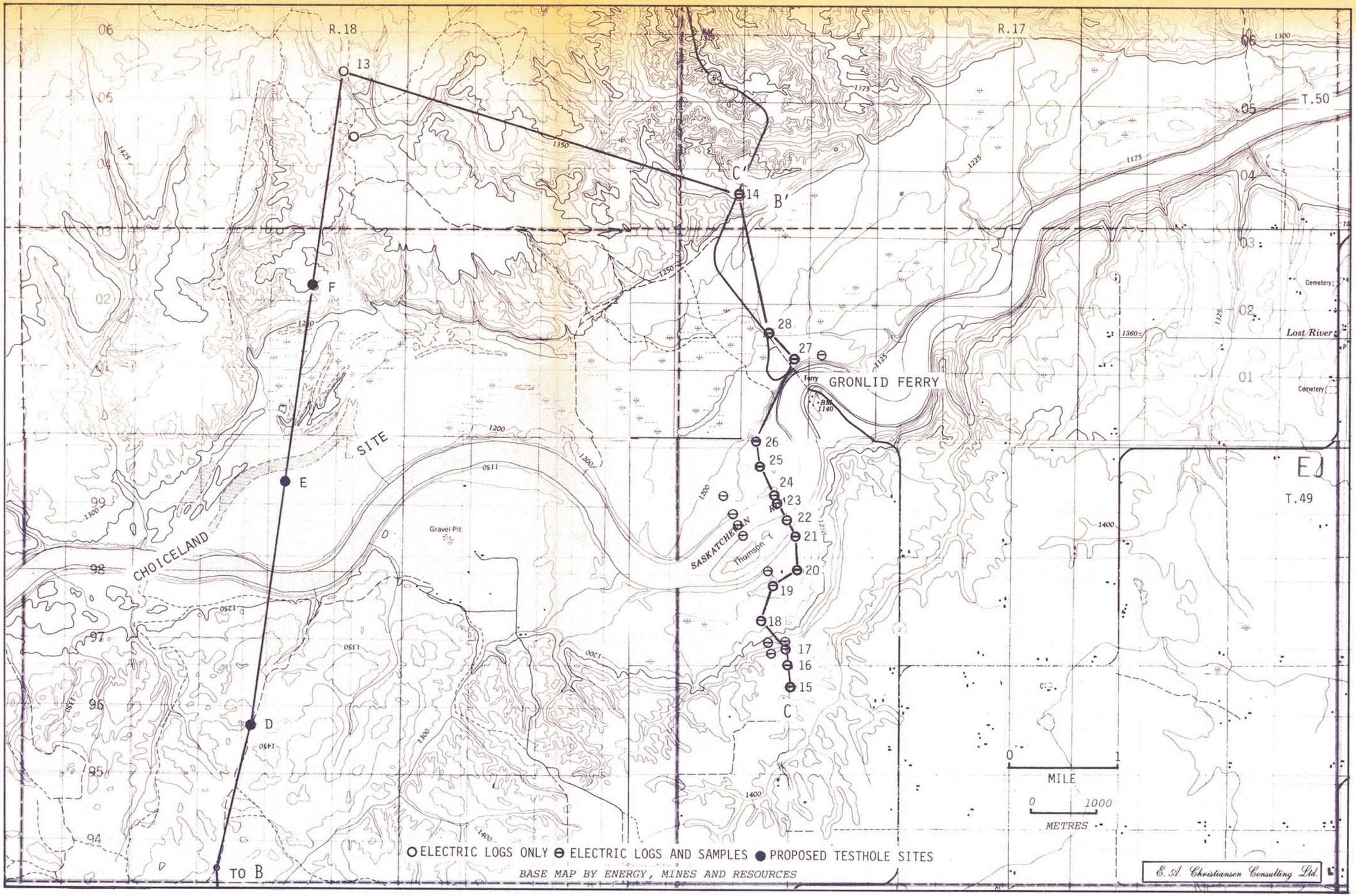
And despite the cautious January estimates, Doyle did say at the time that he felt the worst was over. He went a bit farther Thursday night.

"While we know that growth does not follow a straight upward line, we believe the increase in potash sales volumes this quarter represents the beginning of a return to long-term growth in demand."

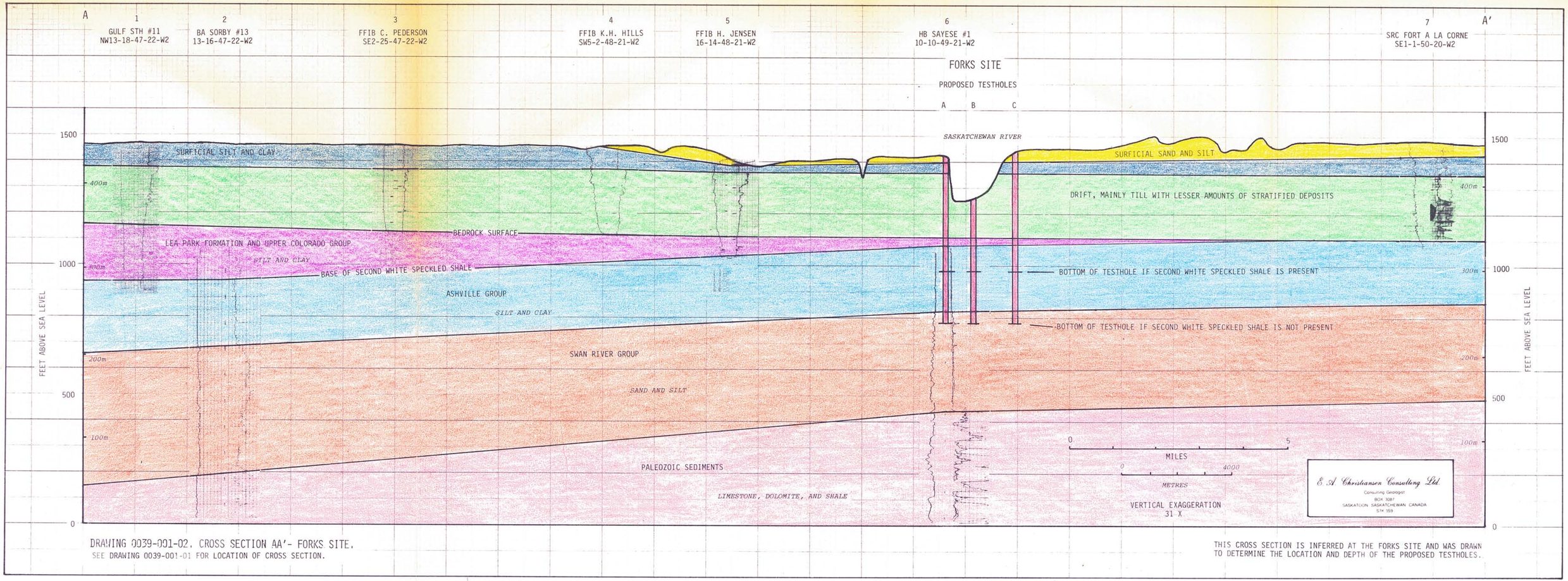
(FINANCIAL POST)



DRAWING 0039-001-01. LOCATION OF CROSS SECTIONS AA'AND BB', PROPOSED TESTHOLE SITES (A-F), AND WEST PART OF DRAWING 0039-001-04.



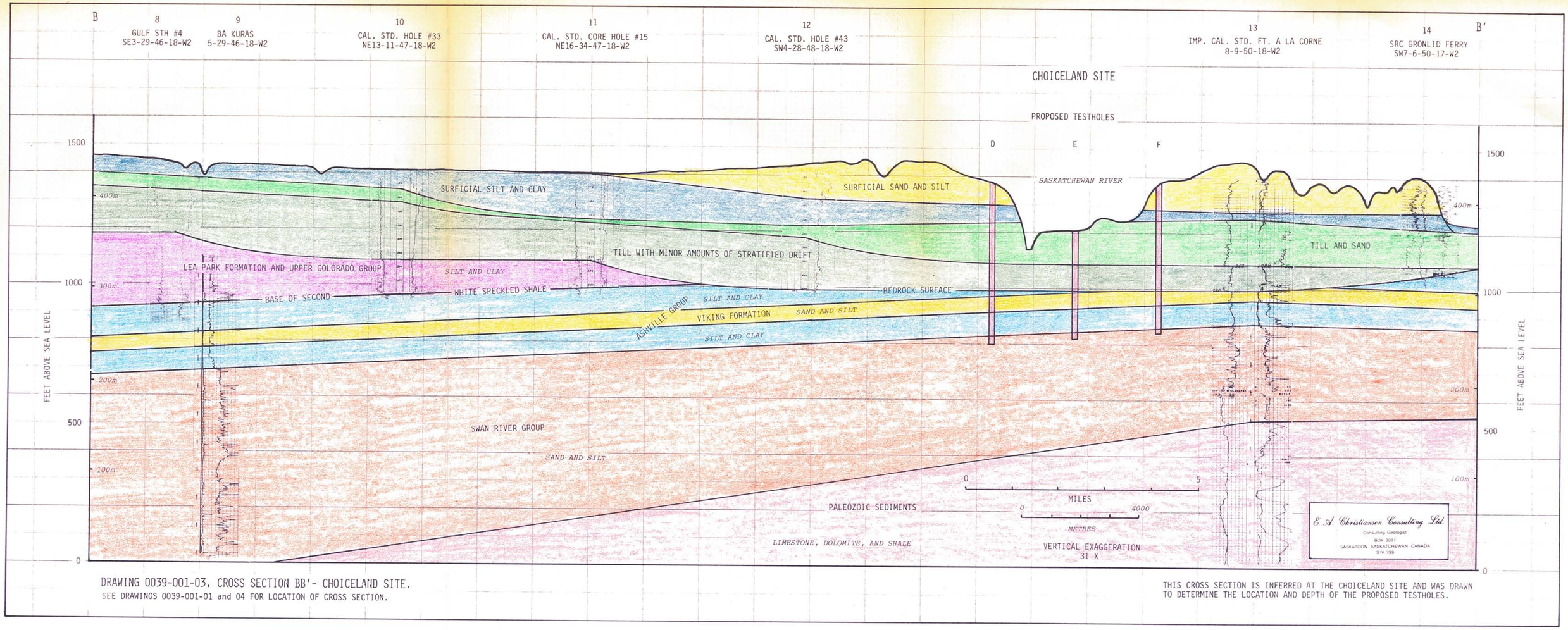
DRAWING 0039-001-04. LOCATION OF CROSS SECTIONS BB' AND CC'.



DRAWING 0039-001-02. CROSS SECTION AA'- FORKS SITE.

SEE DRAWING 0039-001-01 FOR LOCATION OF CROSS SECTION.

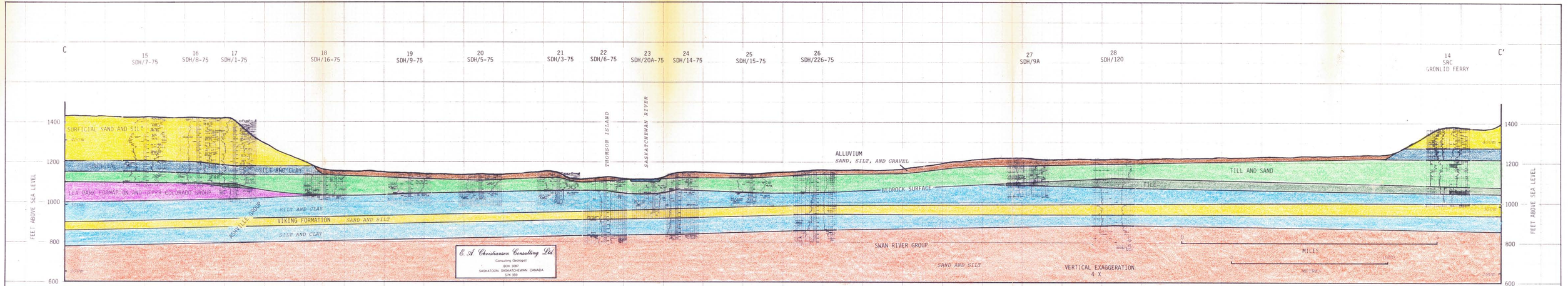
THIS CROSS SECTION IS INFERRED AT THE FORKS SITE AND WAS DRAWN TO DETERMINE THE LOCATION AND DEPTH OF THE PROPOSED TESTHOLES.



DRAWING 0039-001-03. CROSS SECTION BB'- CHOICELAND SITE.

SEE DRAWINGS 0039-001-01 and 04 FOR LOCATION OF CROSS SECTION.

THIS CROSS SECTION IS INFERRED AT THE CHOICELAND SITE AND WAS DRAWN TO DETERMINE THE LOCATION AND DEPTH OF THE PROPOSED TESTHOLES.



DRAWING 0039-001-05, CROSS SECTION CC' AT GRONLID FERRY.

SEE DRAWING 0039-001-04 FOR LOCATION OF CROSS SECTION.