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Digital Mapping

MNCs' core business is large-scale data management. Many companies claim to have mapping capabilities, but few can actually say that they manage a mapping dataset covering a quarter million square miles . While MNC solutions are continually evolving and maturing, they are grounded in our core service offerings, which include Cadastral Mapping and Title / Parcel Mapping. Cadastral and Title / Parcel Mapping are just two areas of spatial data management that MNC innovation has improved.

Further Information:

- **Cadastral Mapping**
- **Title / Parcel Mapping**



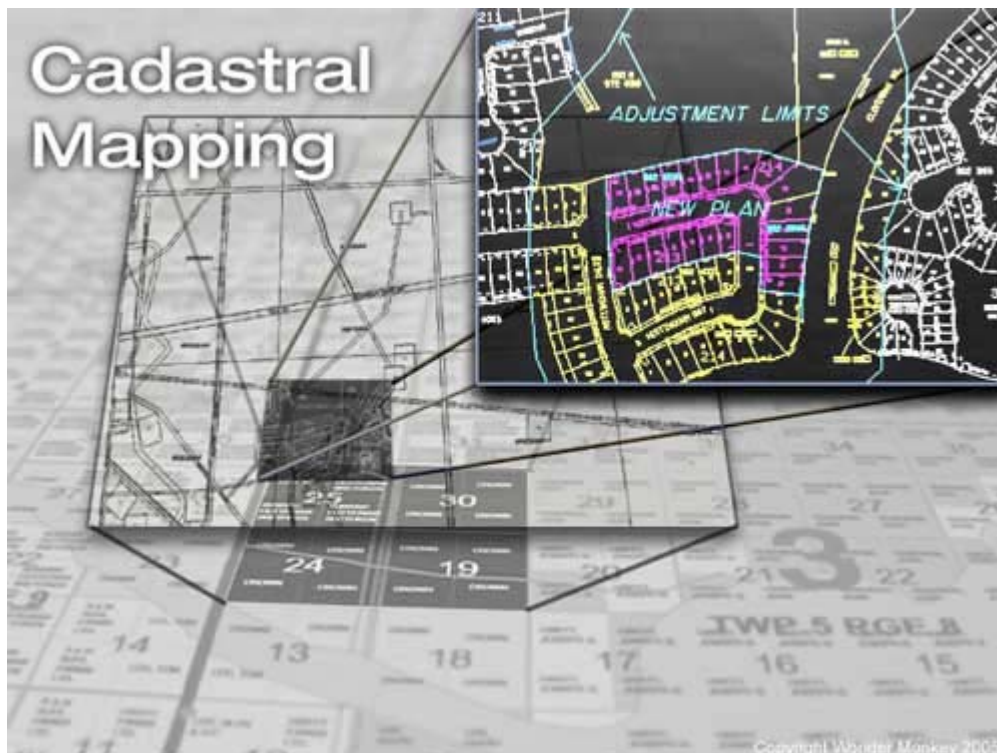
Digital Mapping / Cadastral Mapping

Cadastral Mapping

While MNC solutions are continually evolving and maturing, they are grounded in our core service offerings, which include Cadastral and Title /Parcel Mapping. The SDW Provincial Cadastral Map base is a compilation of all plans of survey registered with Alberta Land Titles. Together with its partner, AltaLIS, MNC is responsible for the continuous maintenance of the provincial cadastral base.

New plans of survey are continuously updated in the cadastral base almost immediately after a plan of survey is registered with Alberta Land Titles. Currently 85% of plans are entered into the base within 24 hours of registration. To date, over 55,000 (digital) plans of survey have been integrated into the base mapping system.

The datasets we manage are an essential base component of a number of existing and planned AM, FM, and GIS initiatives; especially those used by the Government and major Utility companies.





The business knowledge intrinsic to the MNC teams assured the success of the restructuring of the provincial cadastral datasets. To achieve this goal, MNC undertook the significant challenges associated with matching line work and other discrepancies between datasets. Our experts also structured a database, that tracks all changes to the cadastral base over time. In addition, they continually strive to be certain all of the Provincial datasets maintained by AltaLIS are completely in-sync with each other. As a result, recent data is now accessible to all related parties on a vendor neutral basis. The benefits realized by the Province of Alberta and other users, as a result of the re-engineered Cadastral maintenance processes include:

- Data maintenance fees which are less than half the Province's previous costs.
- A process and mechanism whereby reduced maintenance costs are recoverable.
- A considerably more efficient turnaround time; data is now available within hours and days of registration rather than months.
- Data quality and formats have been significantly improved; the quality of the data is completely GIS ready and loads directly into user systems.
- MNC sponsored data standards now ensure data quality over time and over the breadth of a large geographical territory in the Province of Alberta .

Further Information:

-  [Cadastral - Parcel Mapping Project Profile](#)



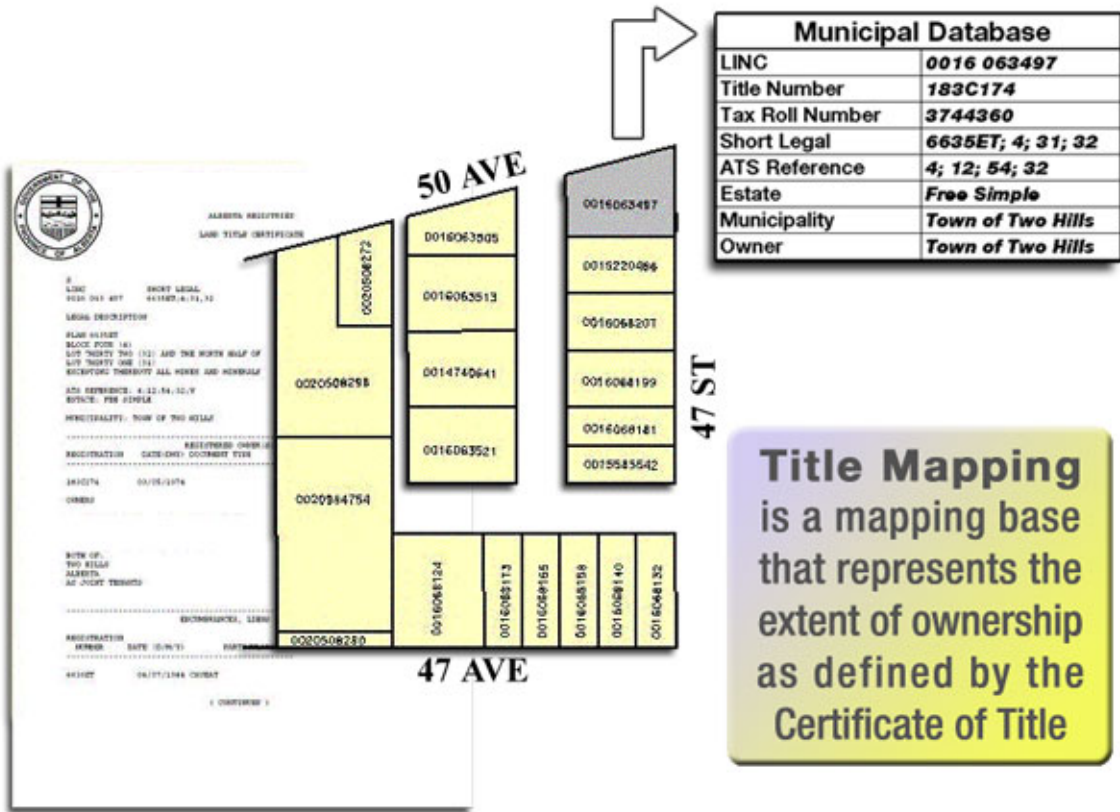
Digital Mapping / Title (Parcel) Mapping

Title/Parcel Mapping

Title Mapping represents extent of ownership as defined by the Certificate of Title. Historically, municipalities created and maintained their own title-mapping products at a significant cost. MNC recognized that the information contained in the Certificate of Title should be integrated with the cadastral database. In conjunction with Alberta Municipal Affairs and individual municipalities, MNC developed a strategy to integrate title mapping into the provincial cadastral database. In November 2003, our team completed mapping over one million titles; the Title Mapping product is available as both a CAD and GIS product.

The benefits of the Title Mapping dataset include:

- Considerable cost savings through the reduction of redundant, repeated activities required to synchronize and update many systems
- Standard Title Mapping directly linked to the Land Titles Office Certificate
- Access to title information through a single Provincial cadastral base
- A cost effective, affordable, province-wide title mapping product available to the public, and providing consistency between, municipalities and registry offices
- An accurate and reliable tool, which allows Land Titles Offices and all other stakeholders to view potential title conflicts.



Further Information:

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[Cadastral - Parcel Mapping Project Profile](#)



Process Innovations

MNC brings a unique ability to work with clients to quickly identify spatial data management and GIS problems and opportunities provide appropriate solutions from our suite of proven tools and processes. Our proven, practical approach consistently provides successful cost-effective solutions, rapidly delivering business value while minimizing capital cost, risks and delays.

Our experience and expertise in managing extremely large data sets in numerous formats leads to very efficient processing and conversion of graphic, CAD and GIS files and databases, large and small. This allows our project teams to focus on working with clients to ensure their specific data integration, processing and presentation needs are met; supported by suitable business processes for our clients' ongoing success.

In partnership with our clients, MNC implemented GIS Internet applications; presenting information from a complex variety of data creators, platforms and systems in useful, easy to use applications, minimizing costs, training and support. MNC has developed best practices and continues research and development with clients in this area. MNC resolves difficult, time-consuming mapping and data management problems.

MNC solutions remove problem areas from our clients' business processes; seamlessly returning good clean data in support of those processes that work well. The MNC approach provides flexibility in determining, with our clients, which processes and services should be performed in the clients' organization and which by MNC's experienced staff. This reduces client costs, while both supporting their ability to deliver improved services and improving data quality as a foundation for the future.

Further Information:

-  [Plan Updating Process Innovations](#)



Data Conversions

MNC provides services in both data conversion, from NAD27 (North American Datum 1927) to NAD83 (adopted and CSRS), as well as projection transformations. MNC specializes in projection conversion of digital data; CAD, tabular or GIS data.

Further Information:

- [NAD Conversions](#)
- [Projection Transformations](#)



Data Conversions / NAD Data Conversions

In 1997, the Canadian federal government developed a distortion model of shifts, which related the movement in coordinate values between the NAD27 datum and the NAD83 datum. Most conversion applications were developed to be applied against an ASCII file of coordinate pairs or else against a DXF format of a graphic/CAD file. The conversion methodology developed and used by the Province of Alberta was very inefficient for use with graphic/CAD files. Instead, MNC used processes; developed by Newby Engineering for performing the conversions of CAD files for database records.

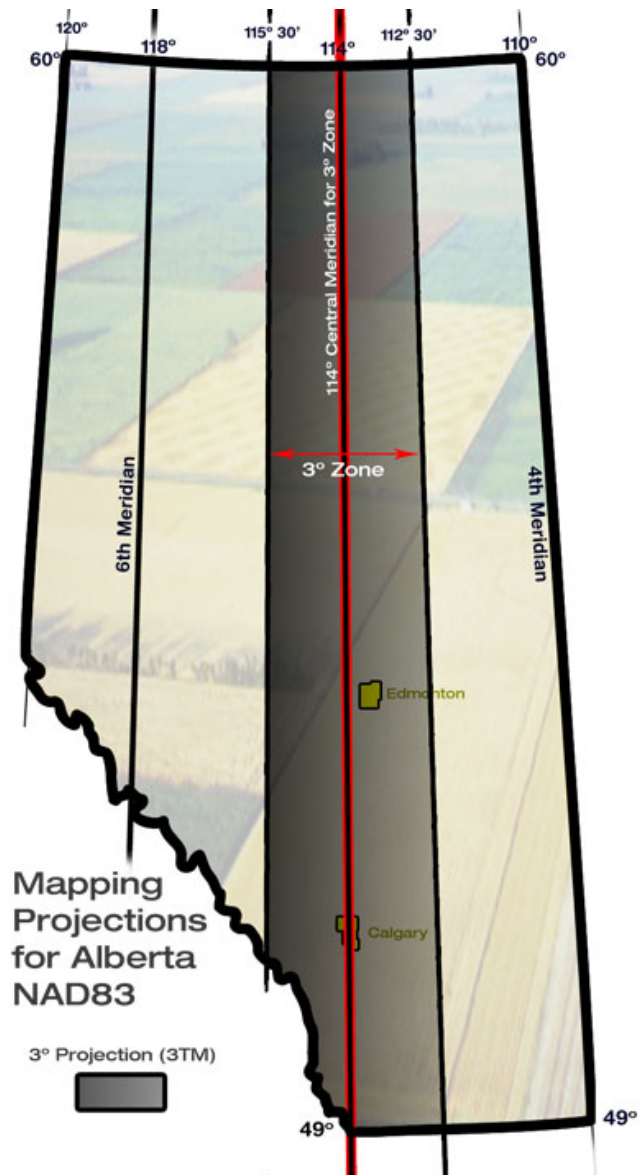
Prior to converting NAD27 files to the NAD83 datum, all the data had to be geodetically correct, all projections known and consistent within the datasets, coordinate values could not be truncated, and there could not be any significant positional differences or errors in the datasets.



Data Conversions / Projection Transformation

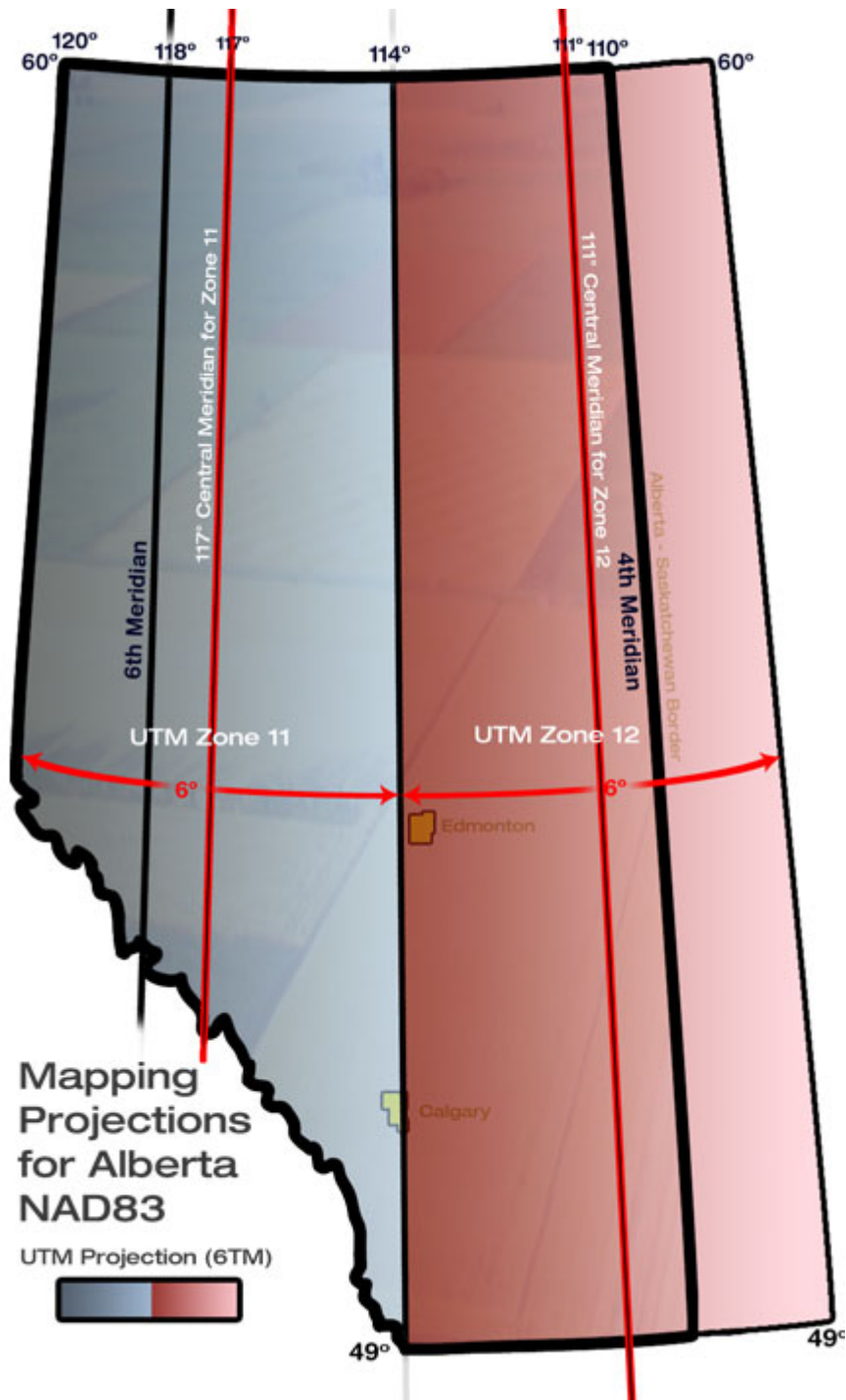
Due to the curvature of the earth, no single projection can cover the entire planet and still be a viable source for comparing vector data. As a result, vector data is often received in varying projections, which may be converted to a common projection for use. The Alberta Provincial Digital data is stored in either 3TM, UTM or 10TM projections. (See diagrams below)

The **3TM projection** is used to represent data within three degrees of longitude zone with the 114th degree as a centre.



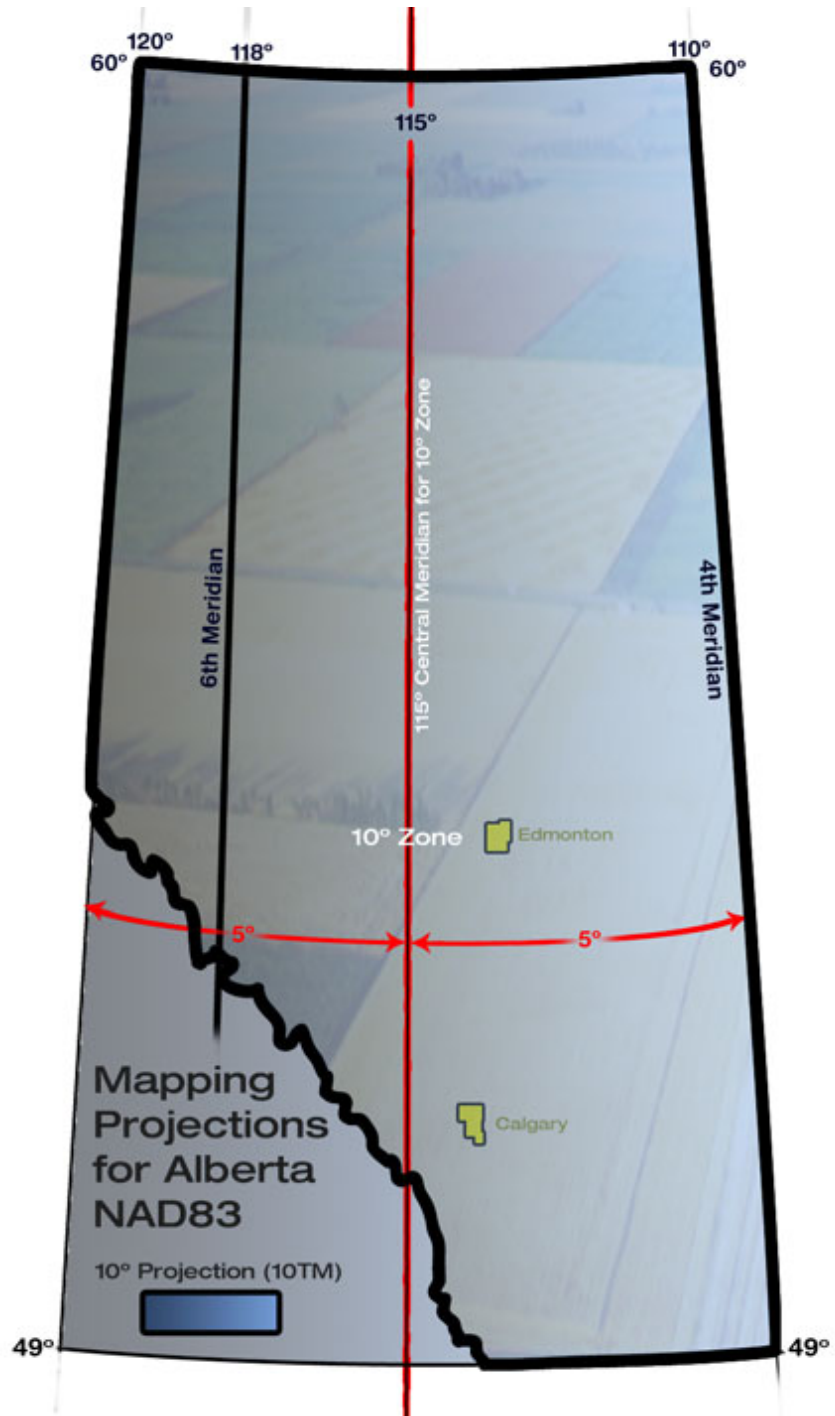


The 6TM (or UTM) projection divides Alberta into two zones (UTM Zone 11 and UTM Zone 12) to represent data, six degrees east and west of the 114th degree of longitude.





The 10TM projection completely covers Alberta, running from the 120th degree of longitude to the 110th.





Geographic Information Systems

A Geographical Information System (GIS) is a computer system for capturing, storing, integrating, manipulating, analyzing, and displaying positional data of features on the Earth's surface. Maps of varying types are overlaid with feature layers, each of which are then linked to an exact position on the graphical image of the map and organized to be studied and to perform statistical analysis.

MNC develops and implements these systems, dealing with complex issues such as: multiple data creators, multiple platforms and mapping systems, and access by diverse groups of users (accountants, management, engineers, surveyors, support staff). Once correctly set up, a GIS can be used for government, planning, local authorities, public utility management, environmental, resource management, engineering, and distribution purposes.

Data is our speciality. Format selection is the client's choice, as is platform. Whether the client chooses an ESRI system, Geomedia, MGE, Map Info, Autocad, Microstation, etc. or a combination of software platforms, MNC will build the data to suit.

Further Information:

- **The Alliance Pipeline GIS Project**



Geographic Information Systems / The Alliance Pipeline GIS

MNC delivered a GIS system for the Alliance Pipeline project; the largest construction engineering and pipeline project (\$3.7 Billion US) in North America at the time (1999). Alliance Pipeline moves over 1.3 billion cubic feet per day of natural gas and natural gas liquids from Northern Alberta and BC to Chicago, to date. The development and implementation of this system was very complex with issues pertaining to:

- Multiple Data Creators
- Multiple platforms
- Metric and Imperial measurement systems
- Multiple mapping systems and projections
- Access by diverse groups of users, including remote access from construction sites along the 3,000 km Right-of-Way

Construction of the pipeline began in 1999. It is 3000 km long, runs across three Canadian provinces, four States, the land of over 7000 land-owners and crosses over 8000 rights-of-way. The GIS was used to prepare for construction, then to support construction and commissioning the pipeline, to manage the design and as-built drawings, inspection reports, photos and data and to provide ongoing access to this data during pipeline operations.

The highest profile component of the system is SmartMap, a system accessed 24/7 by Alliance staff and contractors. With SmartMap, any team member can quickly and easily access information about any portion of the line from any location including access from home, hotels, field sites and engineering, procurement and construction offices across North America. Data included a current set, updated daily, of all engineering drawings, environmental, safety and field inspection reports and photo's, emergency response information and pipeline commissioning status.

Team members can travel without paper. SmartMap minimizes concerns regarding the loss of documentation. MNC also developed field data-capture systems to update various critical information and update databases in a timely manner and with minimal effort, while providing clear audit trails.

Further Information:

-  [Alliance Pipeline Project Profile](#)



MNC - The Company

MNC is a Geomatics Engineering firm specializing in Spatial Data Management, Cadastral and Parcel Digital Mapping, Geographical Information Systems, and Data Conversion. Our goal is to provide clients with practical and innovative data collection, mapping and GIS solutions.

MNC's core business is large-scale data management. Many companies claim to have mapping capabilities, but few can say they manage an entire Provincial mapping dataset covering a quarter million square miles (650,000 km²).

MNC manages this large data set, and has accumulated some impressive statistics:

- More than 800 digital Plans of Survey integrated monthly
- More than 55,000 Plans of Survey integrated to date
- More than 300 Survey firms submit their plans to the Land Title/Registry Office
- Created the "de facto" digital plan submission standard
- Introduction of three (3) new Provincial datasets in 2003; ATS, GeoAdministration and Title Mapping

Projects that were thought impossible, too expensive or too complicated are MNC's specialty.

- The NAD83 conversion for the City of Calgary was estimated to take six months to complete. MNC completed it in one weekend. MNC completed the City of Edmonton conversion in a weekend as well.
- Other Provinces have spent tens of millions of dollars to implement a cadastral plan and have still not achieved MNC levels of efficiency. MNC completed Alberta's system for under \$1 million and our approach required no funding from the government.
- The Title mapping program was considered a dream that could not be achieved without a huge infusion of funding. MNC completed it six months ahead of schedule for under half the cost of all other estimates.

Further Information:

- **The Founding Partners: Bill Martin & Wayne Newby**
- **The MNC Team**
- **The Affiliated Company: AltaLIS Ltd.**
- **The Client List**



MNC - The Company / The Founders

Bill Martin - *P.Eng., A.L.S., C.L.S.*

Mr. Martin has over 30 years of surveying, engineering and mapping experience. He is a registered Alberta Land Surveyor, Canada Land Surveyor and a Professional Engineer. He currently manages the SDW province-wide (Alberta) cadastral mapping project. Mr. Martin was instrumental in re-engineering the processes and systems used to maintain the province-wide cadastral base, which led to the implementation of a legislated requirement for the submission and registration of digital plans in the Land Registry offices. Mr. Martin was also the project manager for the \$4.5 million Title Mapping project, which created a title/ownership GIS dataset for approximately 1.3 million historical titles. Previous to MNC, Mr. Martin was the City Land Surveyor for the City of Calgary for over 8 years. While City Land Surveyor, Mr. Martin was responsible for implementing mandatory Digital Plan Submissions (and developing systems and processes necessary to receive and integrate the Digital Plans). He was also the project manager for the development and implementation of the Calgary High Precision control network, the conversion of the City's spatial data to the NAD83 datum, and a \$6.8 million digital aerial survey project of the city.

Wayne Newby - *P.Eng.*

Mr. Newby has over 20 years of municipal engineering, surveying and data conversion experience. Mr. Newby was Project Leader for the development and implementation of the GIS system at Alliance Pipeline. Mr. Newby was responsible for the evaluation and selection of the GIS platform at Alliance; as well, he coordinated the collection and integration of data from the four engineering firms working on this project. Mr. Newby spearheaded the development of SmartMap; intended to enable senior management and staff, in the remote field offices, to access the multitude of disparate datasets that were being created and collected across the 3200 km of pipeline. He also developed tools to assist in the quality analysis and truthing of the datasets that were being submitted and loaded into the various systems.

Wayne graduated as a Mining Engineer and practiced with an Engineering and Surveying firm specializing in land development and surveying for 5 years before starting his own company, Newby Engineering in 1995. Newby Engineering performed various data conversion services, on extremely large datasets, for the



cities of Calgary, Edmonton, Red Deer, Surrey (B.C.), and for various utility companies (TransAlta Power, Canadian Western Natural Gas, and Edmonton Telephone).

MNC - The Company / The MNC Team

The MNC Team

MNC's success exemplifies the strength of our people and teamwork in partnership with our clients. Our staff come from the environments that our solutions serve, and collectively bring more than 100 years of surveying and mapping expertise. As a result, MNC offers its clients a broad range of services, products, and training.

MNC's practical professional approach to project management consistently delivers solutions for our clients' data problems related to projections, datums, edge matching, symbology, topology, format relationships, and data linkages. Our teams work with our clients to resolve difficult and time-consuming mapping and data management problems; MNC solutions provide good clean data in support of clients' business needs.

MNC - The Company / AltaLIS Ltd.

Affiliated Company: AltaLIS Ltd.

In late 1997, MNC and QC Data Ltd. formed a joint venture company, AltaLIS Ltd. Together, the experts working under the AltaLIS umbrella became the agents for Spatial Data Warehouse Ltd., managing the five primary mapping data sets for the Province of Alberta: Cadastral Mapping, Title Mapping, Topographic, and Small Scale Mapping (e.g. 1:1,000,000 scale). AltaLIS also manages the Provincial GeoAdministration boundaries and the ATS (Alberta Township System).

Through AltaLIS, MNC provides the Province of Alberta with affordable spatial data maintenance; including regular updates, process re-engineering, data storage, data distribution, value-added re-distribution, and general management. The MNC map maintenance processes, include electronic submission of survey data. MNC has improved map accuracy to sub-millimeter in urban areas, with no capital outlay, covering a quarter million square miles (650,000 km²). Our experts make Alberta's base mapping infrastructure readily



available and accessible to the people who need and depend on precise information. We provide comprehensive GIS ready data to:

- Provincial Government
- Municipal Government
- Utility Companies
- Oil & Gas Companies
- Surveyors

MNC - The Company / The Client List

The Client List

"MNC's fundamental strength is their understanding and rare ability to take a wide variety of data and information that needed to be spatially and temporally referenced across the entire breadth of the geography and disciplines touched by the pipeline, and to find, build or amalgamate innovative methods and tools to convert, collect and integrate data and information from various sources." ~ Alliance Pipeline

- Alberta One-Call
- Alliance Pipeline
- AltaLIS
- City of Edmonton, Alberta
- City of Lethbridge, Alberta
- City of Red Deer, Alberta
- City of Surrey, British Columbia
- Warner County, Alberta
- County of Lethbridge, Alberta
- Vulcan County, Alberta
- EnCana Corporation
- Fording Coal
- Land Titles Office - Government of Alberta
- Municipal Affairs - Government of Alberta
- Sustainable Resources - Government of Alberta
- Municipal District of Willow Creek, Alberta
- MetroNet
- Municipal District of Taber, Alberta
- Pasco County, Florida
- Petro-Canada
- Spatial Data Warehouse
- Talisman Energy
- TransAlta Corporation



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