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## Manitoba Hydro Integrated Property Parcel Fabric: Building the first foundational Province-wide Integrated Property Parcel Fabric

Modern land and asset management demand accurate and seamless property mapping. Manitoba did not have a single, province-wide property parcel GIS dataset. **Manitoba Hydro, as the province's major energy provider, required a unified parcel layer** to facilitate effective planning, infrastructure development, and informed spatial decision-making across its operations.

**MNC (Martin Newby Consulting Ltd.)**, in partnership with **Esri Canada** and Manitoba Hydro's Geospatial Data Services, led the design, development, and implementation of a **province-wide property parcel base map, synthesizing over 850 disparate datasets** into a cohesive, scalable foundation for Manitoba Hydro and the wider GIS user community. This collaboration resulted in a **province-wide parcel fabric**, an achievement that had never been realized by any single agency in Manitoba before.

### Existing Source Data



### CHALLENGE

#### Disparate Datasets

LEGEND	SOURCE	DATASETS	PARCELS
	City of Winnipeg	1	236,941
	Province of Manitoba	281	266,186
	Canada Lands	278	11,016
	Manitoba Hydro	299	184,638
	Township Grid	35	825,612
	<b>TOTAL</b>	<b>894</b>	<b>1.5 million</b>

To support effective planning, operations, and land management, Manitoba Hydro needed a single, authoritative property parcel GIS dataset for the entire province. However, no such resource existed. The available parcel information was highly fragmented, scattered across more than 850 disparate sources with varying formats, accuracy, and standards. Legacy CAD files further complicated the landscape. Without a unifying process or dataset, Manitoba Hydro was limited in its ability to deliver reliable spatial information and respond to changing business needs.

Image showing Source Data

### KEY CHALLENGES INCLUDED:

- No existing parcel dataset covering all of Manitoba
- Over 850 disparate data sources, including municipal, provincial, federal, and internal archives
- Inconsistent data formats, spatial reference systems, and attribute standards
- Legacy CAD data plagued by varied structures and quality issues

- The need for a process that was repeatable, sustainable, and supported ongoing updates

These limitations hindered Manitoba Hydro's efficiency in supporting GIS applications, planning transmission networks, and making informed, province-wide spatial decisions.

# SOLUTION

To address the challenge of consolidating over 850 disparate parcel datasets into a single, integrated parcel base map for Manitoba Hydro, MNC undertook a comprehensive and systematic approach under Manitoba Hydro's Geospatial Data Services direction.

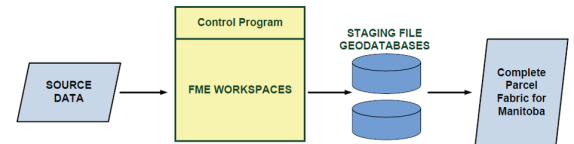
## KEY SOLUTION COMPONENTS:

### 1 GAP ANALYSIS:

- Evaluated existing datasets from sources including the City of Winnipeg, the Province of Manitoba, Natural Resources Canada, and Manitoba Hydro's internal archives.
- Ensured a thorough understanding of data limitations
- Confirmed that Esri's Integrated Cadastral Fabric data model could be supported.

### 2 TOOL DEVELOPMENT:

- MNC designed a suite of modular FME (Safe Software Feature Manipulation Engine) workspaces and custom scripts.
- FME workspaces and scripts standardized attribute structures, converted geometries and ensured topological integrity.
- Provided robust quality checks through staging file geodatabases.



MNC's update workflow

## 20 Unique FME Workspaces

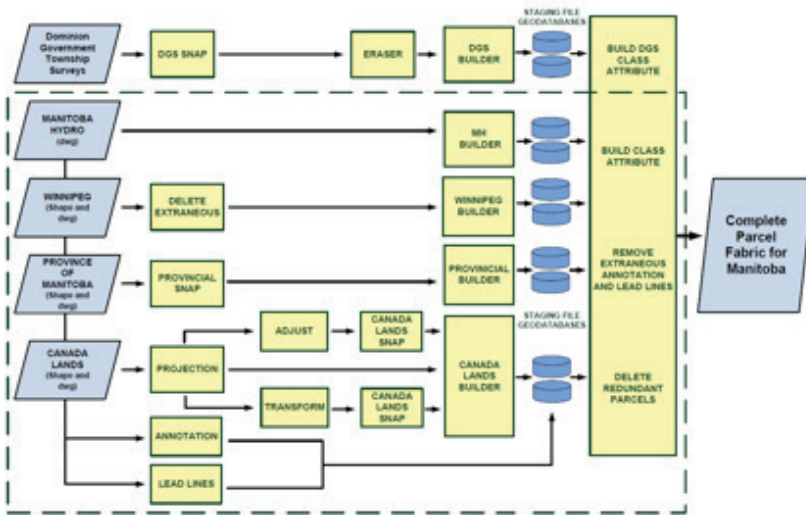


Image showing parcel transformation

### 3 DATA INTEGRATION:

- Employed advanced spatial validation techniques, including custom transformation, adjustment, and conflation workspaces, to resolve spatial misalignments and inconsistencies across datasets.
- Standardized and normalized legacy CAD data, often requiring substantial cleaning and batch processing to address varied structures and quality issues.
- Ensured a uniform, accurate, and topologically sound parcel fabric ready for seamless integration.

### 4 FINISHED PARCEL DATASET:

- Delivered a seamless, province-wide parcel fabric containing over 1.5 million polygons, serving as a single source of truth for Manitoba Hydro.
- Greatly improved the organization's ability to support GIS applications, data quality, and spatial decision-making across all business units.
- Designed for ongoing maintenance and updates, enabling long-term sustainability and enhanced internal support.

The resulting GIS parcel fabric is easy to maintain and update, eliminating the need to reference hundreds of separate datasets. It significantly improves data quality and decision-making for Manitoba Hydro, setting a new standard for parcel mapping in the province. The uniform parcel base map not only supports Manitoba Hydro's operations but also provides a valuable resource for all surveying, mapping, and GIS users in Manitoba, reducing duplication of effort and serving as a collaborative, authoritative foundation for provincial geospatial data initiatives.

The integrated parcel fabric delivered tangible value for Manitoba Hydro and beyond:

**SINGLE SOURCE OF TRUTH:** One seamless, province-wide parcel layer eliminates the need to reference hundreds of fragmented datasets.

**REPEATABLE, MAINTAINABLE PROCESS:** Automated workflows allow quick, predictable updates as data or requirements evolve.

**IMPROVED OPERATIONAL EFFICIENCY:** Staff can easily access and maintain the fabric, supporting faster, better-informed decisions.

**ENHANCED INFRASTRUCTURE PLANNING:** The high-quality, topologically sound parcel layer enables more effective design and delivery of power transmission networks.

**BROADER VALUE FOR MANITOBA:** The project delivers a common, authoritative parcel mapping base for all provincial GIS users, reducing data duplication, improving collaboration, and supporting future authoritative data integration across organizations.

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*The project was carried out with a high level of professionalism. Having subject-matter experts that have a thorough knowledge of parcel mapping and a passion for their work contributed to the success of the project.*

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**ROB GERRY,** GEOGRAPHIC INFORMATION OFFICE FOR MANITOBA HYDRO

## MNC SERVICES & TECHNOLOGY USED

### SERVICE CATEGORIES:

- Parcel Fabric
- Needs and Requirements Analysis
- GIS Strategy and Planning
- Data Model and Database Design
- Data Conversion/ Migration

### TECHNOLOGY PLATFORM & TOOLS:

- ArcGIS (Esri)
- FME (Safe Software)



**CONTACT US TODAY** to discuss your geospatial needs.

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### ABOUT MNC

The Cadastral and Parcel Mapping Experts



MNC is a trusted leader in cadastral and parcel management with 25+ years of experience delivering GeoAI-ready datasets, modernizing parcel fabrics, and automating GIS workflows. As an Esri Gold and Cornerstone Partner with a Parcel Management Specialty and State and Local Government Specialty, MNC provides scalable advanced GIS, ArcGIS Pro, FME automation, MicroStation, AutoCAD and cloud-ready geospatial systems that improve data quality and support government land administration modernization across Canada, the USA, and the Caribbean.





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