

# INTEGRATING FUEL TREATMENT DATA INTO THE CANADIAN WILDLAND FIRE INFORMATION FRAMEWORK

## A REVIEW OF CANADIAN DATA MANAGEMENT SYSTEMS AND REQUIREMENTS

Rex Hsieh, FPInnovations, Wildfire Operations

Steven Hvenegaard, FPInnovations, Wildfire Operations

Razim Refai, FPInnovations, Wildfire Operations

**ABSTRACT:**

The National Fuels Management Reference Database was designed to collect data on wildland fuel treatment implementation and maintenance. This information is relevant to the Emergency Management Strategy in understanding where fuel treatments are located and how they were applied. FPIinnovations reviewed the current status and use of the database and data depositories within wildfire management agencies. Combined with the findings of wildfire risk assessment experts' data requirements, recommendations were provided for the integration of fuel treatment data into the Canadian Wildland Fire Information Framework.

Project number: 301013918

TECHNICAL REPORT – TR 2020 - 20

**ACKNOWLEDGEMENTS**

This project was financially supported by Natural Resources Canada.

The author would like to thank the wildfire agencies and risk assessment experts who responded to the interview requests. Special thanks to Maria Sharpe of Canadian Interagency Forest Fire Centre Information Management, also Rod Suddaby, Brian Simpson, and Dawn McVittie of Natural Resources Canada.

**APPROVER CONTACT INFORMATION**

Michael Benson, Manager  
FPIinnovations, Wildfire Operations  
michael.benson@fpinnovations.ca

**REVIEWERS**

Samuel Lacarte, Forest Analyst  
Canadian Forest Service

**AUTHOR CONTACT INFORMATION**

Rex Hsieh, Researcher  
FPIinnovations, Wildfire Operations  
rex.hsieh@fpinnovations.ca  
(780) 740-3899

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# BACKGROUND

The National Fuels Management Reference Database (NFMRDB) was designed to address specific questions regarding fuel treatments. These questions are also relevant to the Emergency Management Strategy.

- Where are the fuel treatments located?
- What type of fuel treatments have been applied?
- How have the fuel treatments been applied?
- What is the impact on fire behaviour when a wildland fire burns into a fuel treatment?

Currently, the NFMRDB is a standalone application since it was developed prior to the inception of the Canadian Wildland Fire Information Framework (CWFIF) and Canadian Interagency Forest Fire Centre Information Management/Information Technology Strategy (CIFFC IM/IT Strategy). If the NFMRDB can be incorporated into the larger CWFIF, the data will be available for community risk analysis, fuel mapping, and economic analysis under the Emergency Management Strategy.

The team behind the Canadian Wildland Fire Information System (CWFIS) of Natural Resources Canada asked FPInnovations to review the status of the NFMRDB and the current fuel treatment depositories of Canadian wildfire agencies. The findings from this review will help facilitate decisions on the integration of fuel treatment data into the CWFIF. This integration will save time and money towards successfully implementing the Emergency Management Strategy.

## Emergency Management Strategy

The Emergency Management Strategy for Canada establishes federal, provincial, and territorial government priorities to strengthen the resilience of Canadian society (Public Safety Canada, 2019). This is supported by these levels of government and their respective emergency management partners. Wildland fire is one of the disasters that the Emergency Management Strategy addresses. The Government of Canada is committed to implementing the strategy with an investment of \$151 million over five years and \$9.28 million ongoing support annually thereafter (Indigenous Service Canada, 2019).

## CWFIF and CIFFC IM/IT Strategy

The Canadian Wildland Fire Information System (CWFIS)<sup>1</sup> is a suite of digital tools designed to provide statistical information regarding wildland fires at a national scale. The team behind the CWFIS at Natural Resources Canada is working on developing the CWFIF. The CWFIF will act as an architectural guide in facilitating the development of future wildland fire information tools, data storage, and information transfer processes.

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<sup>1</sup> <https://cwfis.cfs.nrcan.gc.ca/home>

The CIFFC IM/IT Strategy is an information and technology management strategy for improving resource and information exchange through cooperation and data sharing between Canadian wildfire agencies. The strategy is managed by the CIFFC IM/IT Committee. The CWFIS team is a part of the committee.

Development of the CWFIF and the CIFFC IM/IT Strategy are separate processes, yet they have complementary objectives and outcomes. The CWFIF addresses information system architecture while the CIFFC IM/IT Strategy addresses data sharing and integration among wildfire management agencies to improve the efficiency of wildfire operations. The CIFFC and Natural Resources Canada will move forward with the CWFIF and CIFFC IM/IT Strategy to develop the next generation of national wildfire information tools with funding support from the Emergency Management Strategy. These tools will promote knowledge and resource exchanges to build resilient communities and reduce impact on Canadian lives from wildland fires.

## **National Fuels Management Reference Database**

The Canadian Council of Forest Ministers receives strategic advice and policy guidance on wildland fire management issues from the Wildland Fire Management Working Group. The working group's Fuels Management Task Team identified a need for a national fuel management reference database to address the issue of lack of shared information between wildfire management agencies regarding fuel management effectiveness and best practices.

FPInnovations developed the NFMRDB through multiple contracts with the working group and Natural Resources Canada between 2014 and 2015. The database collects data as two different input records – 1) fuel treatment implementation, and 2) fire behaviour modification when wildfire interacts with fuel treatments. After the NFMRDB was completed and operational, it was migrated to CIFFC and maintained within the CWFIS. Currently, wildfire management agencies can access the NFMRDB through the CIFFC web portal to enter data and query information.

## **OBJECTIVES**

FPInnovations has been contracted to review Canadian wildland fuel treatment data storage systems for possible integration into the CWFIF. The specific objectives for accomplishing this goal are as follows:

- Understand the future data requirements for wildfire risk assessment.
- Gather information on the current status of fuel treatment depositories and the NFMRDB.
- Find possible solutions for incorporating fuel treatment data into the CWFIF and possible unified data standards and output.

# METHODS

## Understanding the current status of NFMRDB

FPIInnovations analyzed the current utilization of the NFMRDB by accessing the database through the CIFFC portal. The number of fuel treatment records and fire behaviour observations input by each agency was determined.

## Projecting future data requirements

FPIInnovations interviewed wildfire risk assessment experts by phone and in person to understand the future data requirements for wildland fire risk assessment around communities. The experts are listed in Table 1.

Table 1. Wildfire risk assessment experts

Name	Organization	Position	Expertise
Jen Beverly	University of Alberta	Assistant professor in wildland fire	Wildfire risk and landscape values-at-risk mapping
Brian Simpson	Natural Resources Canada	Wildland fire manager	Fuels model
Chris Stockdale	Natural Resources Canada	Wildland fire research and extension scientist	Wildfire risk and ecology
Stew Walkinshaw	Montane Forest Management	Owner	Fuel treatment and FireSmart planning for communities

## Analyzing the current status of fuel treatment depositories within wildfire agencies

Emails were sent out to 13 Canadian wildfire management agencies to request phone interviews in early February 2020. These phone interviews were used to gather information on the current status of fuel treatment data depositories. The seven agencies that responded are listed in Table 2. The agencies from Yukon, Manitoba, Ontario, Quebec, Prince Edward Island, and Newfoundland and Labrador did not respond to the requests.

Table 2. Wildfire agencies responding to interview requests

Agency	Abbreviation <sup>a</sup>	Contact	Position
British Columbia	BC	Kelly Osbourne	Fire and fuel management officer
		Rory Colwell	Superintendent fuels management
Alberta	AB	Dave Schroeder	Prescribed fire program coordinator
Northwest Territories	NT	Matthew Coyle	Fire geomatics analyst
Saskatchewan	SK	Larry Fremont	Education and prevention coordinator
New Brunswick	NB	Troy Adams	Supervisor of fire centre operations
Nova Scotia	NS	Morgan Oikle	Fire science officer
Parks Canada	PC	Scott Murphy	National fire management officer

a. Abbreviations of wildfire agencies are use in this report according to the CIFFC Directory (Canadian Interagency Forest Fire Centre Inc., 2019)

## ANALYSIS AND FINDINGS

### Current status of NFMRDB

The NFMRDB is hosted and maintained by the CWFIS. Wildfire management agencies can access the database through the CIFFC portal with user accounts. The back end of the database is PostgreSQL and the user interface platform is Drupal. Appendix 1 displays the data model.

Table 3 shows the number of records in the NFMRDB. In comparison to the estimated numbers among wildfire management agencies' data depositories, the NFMRDB only stores a fraction of existing fuel treatment information.

Table 3. Comparison of the number of records between the NFMRDB and data depositories of wildfire management agencies

	NFMRDB	Wildfire management agencies				
		BC	AB	NT	SK	PC
Fuel treatment	38	5 000	3 000	500	90	325
Fire behaviour	22	Wildfire management agencies do not store fire behaviour data within their data depositories				

Table 4 shows the distribution of fuel treatment site and fire behaviour observation records entered by individual agencies. These numbers show that the utilization of the database was low since its development was completed in 2015.

Table 4. Number of records entered by agencies

Agency	Number of fuel treatment sites	Number of fire behaviour observations
BC	0	2
AB	6	5
NT	2	8
SK	26	7
MT	4	0

## Requirements of fuel treatment data for risk analysis

The four wildfire risk assessment experts use different tools and methods for conducting risk analysis. The methods and fuel treatment data requirements communicated by these experts are summarized in Table 5.

Table 5. Risk analysis methods and data requirement

Expert	Risk analysis method	Data requirement on fuel treatment
Beverly	Assessing the exposure of the built environment to potential ignition sources generated from vegetative fuel (Beverly, Bothwell, Conner, & Herd, 2010)	Yes, need fuel treatment data to classify the fuel hazardous class around community
Simpson	Use Burn-P3 for probability of wildfire risk, use social study methods for impact of wildfire	Yes, fuel treatment map, fuel load, and fuel structures
Stockdale	Combine with Burn-P3, Prometheus, Multi-scalar, and FIRETEC	Yes, fuel map, fuel type, fuel treatment applied, fuel load, fuel structure, local weather information, fire history, topography, grass fuel, seasonal change (curing), and age of fuel treatment
Walkinshaw	Follow the FireSmart recommendations and combine with personal experiences from fire operations	Yes, it will help with geospatial data overlap with community and fuel maps

All the experts agreed that digital and spatial data format data are needed for risk analysis. Also, the standardization of data and terminology on fuel treatments among wildfire agencies is important because it will impact the accuracy/compatibility of the analysis.

Common required data fields suggested by the experts are:

- fuel treatment area perimeters in geospatial polygons
- treatment
- treatment date
- original fuel type



Other varied required data fields suggested by the experts include:

- fuel structure (Stockdale; Simpson)
- fuel load (Stockdale; Simpson)
- species composition (Stockdale; Simpson)
- treatment cost (Simpson)
- topography, ground condition, and aspect (Stockdale; Simpson)

## **Ability of the NFMRDB to answer Emergency Management Strategy business need**

By comparing the data model of the NFMRDB and the discussion notes from the experts, FPInnovations found that the structure of the NFMRDB meets most data requirements of the wildfire risk assessment experts. The one shortcoming identified in this study is capturing the treatment perimeter in geospatial data format, such as polygons. This data attribute is missing because the NFMRDB only records the centre point of a treatment. The NFMRDB will need to include the perimeters of treatment to meet the needs of risk assessment in the future.

The current number of data records within the NFMRDB is low. The existing data can only provide localized case studies but will not be adequate for a national scale analysis. The number of records needs to be increased and matched with current data sets within wildfire management agencies to provide any meaningful statistical analysis.

## **Current status of existing fuel treatment data depositories within agencies**

Seven Canadian wildfire management agencies responded to phone interview requests. Of these seven agencies, only NB does not collect fuel treatment data nor apply fuel treatments. The other six agencies apply fuel treatments within their jurisdictions and have fuel treatment data depositories.

Table 6 summarizes the current conditions of fuel treatment depositories of wildfire management agencies. The table shows that all data are stored in databases. Except PC, they contain polygons to define the perimeters of fuel treatments. AB, NT, SK, and PC store fuel treatment data in standalone databases that do not interact with other information systems. BC and NS store fuel treatment data in large provincial data management systems.

Table 7 summarizes usage of the fuel treatment depositories of wildfire management agencies. The agencies' internal staff are using fuel treatment data actively for fuel treatment planning and risk assessment purposes. BC and NS allow external users to access maps through their web portals but not detailed meta data.

Table 6. Current conditions of fuel treatment data depositories among wildfire agencies

	BC	AB	NT	SK	NS	PC
<b>Digital format</b>	Yes	Yes	Yes	Yes	Yes	Yes
<b>Geospatial data</b>	Polygon	Polygon	Polygon	Polygon	Polygon	No
<b>Standalone</b>	No, a part of RESULTS	Yes	Yes	Yes	No, a part of NS Open Data Portal	Yes
<b>Location</b>	Internal network	Internal network	Internal network	Internal network	Internal network	Internal network
<b>Database</b>	Assume ESRI geo database	MS Access and ESRI personal geo database	ESRI geo database	ESRI geo database	Assume ESRI geo database	SharePoint
<b>Who is managing</b>	Provincial ministry	Dave Schroeder	Matthew Coyle	Prevention unit	Socrata	Emma Zerr

Table 7. Usage of fuel treatment depositories among wildfire agencies

	BC	AB	NT	SK	NS	PC
<b>Who has access</b>	BC fire centres, consultants, and tenure holders	AAF internal	Fire Geomatics Unit	SK Wildfire Management internal	Map available to public, meta data only available internally	PC Fire Management internal
<b>Who are using the data</b>	Fire centres, consultants, and contractors	AAF internal	NT risk management coordinator and the managers of 5 regions	SK Wildfire Management operational staffs	NS fire prevention officers	PC fire management personnel
<b>How to access</b>	Through BC RESULTS Application <sup>a</sup>	Request to Prescribed Fire Program	Request to Fire Geomatics Unit	Through an internal mapping website or the prevention unit	Through the NS Open Data Portal	Through an internal SharePoint site <sup>b</sup>
<b>Number of records</b>	Estimated 5 000	Estimated 3 000	Estimated 500	Over 90 communities	Unknown	325

a. <https://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/silviculture/silviculture-reporting-results>

b. <https://data.novascotia.ca/>

Table 8 is the summary of the data entry elements of fuel treatment data depositories of wildfire agencies. All surveyed agencies except NT have the same personnel collecting and entering data. Only the SK data depository includes fuel treatment data from municipalities and counties. BC has a separate file folder to store fuel treatment plans from municipalities as files. Alberta relies on the Forest Resource Improvement Association of Alberta to collect provincially funded fuel treatment on non-Crown land. NT and NS do not store municipal and county data but hope to collect this in the future.

Table 8. Data entry

	BC	AB	NT	SK	NS	PC
<b>Who collects data</b>	Consultants	AAF Wildfire Management Areas	NT risk management coordinator and the managers of 5 regions	The prevention unit	NS resource management group	Local fire management personnel at PC sites
<b>Who enters data</b>	Consultants	AAF Wildfire Management Areas	Fire Geomatics Unit	The prevention unit	NS resource management group	Local fire management personnel at PC sites
<b>Municipal and county data</b>	Partial	Partial	No, hope in the future	Yes	No	Partial

Appendix 2 provides snapshots of the data depositories of AB, NT, SK, and PC. The common data are:

- treatment site description
- treatment area as polygon
- treatment method
- treatment completion date

Other data collected by agencies include:

- budget or cost
- resources used during treatment
- fuel load
- treatment description
- FBP fuel type
- photos

## Agencies' ability to provide the data

The agencies participating in this study expressed interest in providing fuel treatment data to CWFIF except NB because NB does not apply fuel treatment. Currently, these agencies do not

have data transfer application/service interface in place to provide automatic on-demand external data query. All data requests from external users require manual processing:

- External user sends a data request to a wildfire management agency.
- An internal staff member of the agency queries and compiles data into files.
- The internal staff member sends the files by email or other file transfer service.

The main purpose of the agencies' fuel treatment data depositories is supporting wildfire prevention and suppression, not research. Therefore, most of the data depositories only capture common data. Their individual fuel treatment plans may carry more detailed information. However, the agencies can add additional data into the dataset, if requested.

Also, the data is entered annually, so real-time access during the fire season in hope of getting the latest update on fuel treatments may not be possible.

Currently, detailed fuel typing by fuel load and vegetation structure is not available among agencies, although the agencies agree these data attributes are important for fire behaviour analysis and prediction. Standard fuel inventory techniques are cost prohibitive and agencies are looking for more efficient ways of gathering fuel loading and vegetation structure data.

## **Using the CIFFC data integration process to ensure fuel treatment data interoperability**

The CIFFC data integration process is developed by the CIFFC IM/IT Committee. The purpose of a data integration project under the CIFFC data integration process is to “improve and streamline the collection and sharing of multi-agency data as part of a modernized information management system, including support to models and applications” (CIFFC IM/IT Committee, 2019). Rod Suddaby is an architect and information systems specialist with the CWFIS. During the interview with him on March 2, 2020, he explained the current data integration project is focused on wildfire operations data, and the next scheduled project will be on fuel treatment data.

The goal of the CIFFC data integration process is to establish national data standards to reduce confusion around terminologies used and ensure that data carry the same meaning and values for future usage. There are two types of data standards in the data integration process: MDS30 and EDS. MDS30 is a minimal data set with no more than 30 elements to meet core business requirements. EDS is an extended data set for additional data fields to meet future research needs.

The CIFFC data integration process is a useful tool for ensuring fuel treatment data interoperability in the future. The reason is common data fields are identified among different data depositories and these fields are primary candidates for MDS30. The EDS can contain the rest of the variable data fields. Figure 1 shows the potential data transfer process between the agency data depositories and how the data management infrastructure will convert the fields to fit into the data standards with individual Extract, Transform, and Load (ETL) solutions.

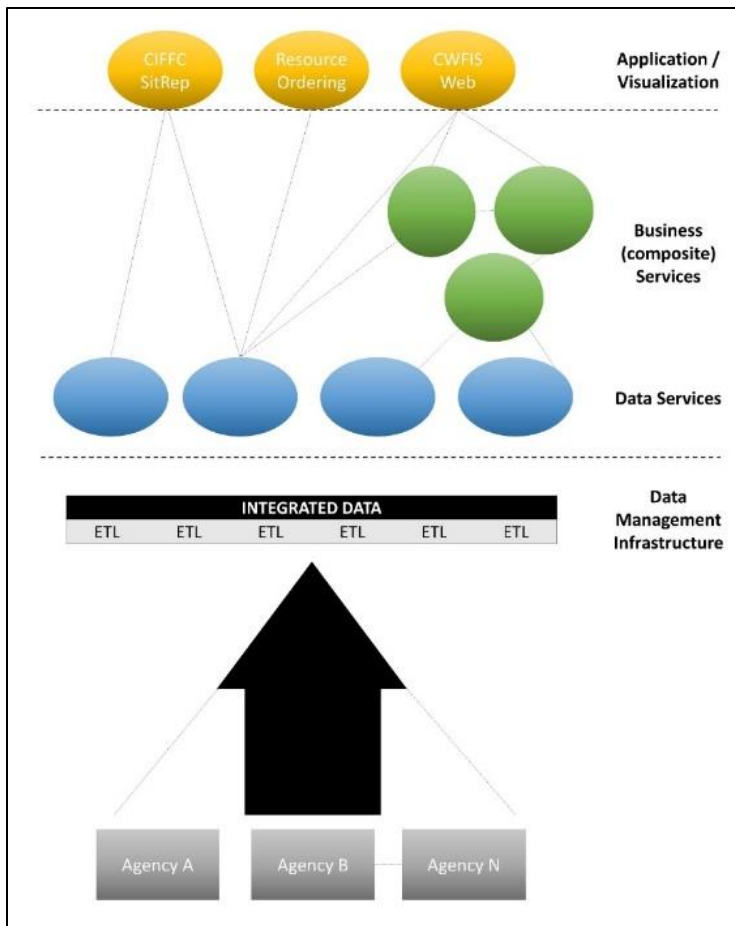


Figure 1. CIFFC IM/IT Strategy diagram (CIFFC IM/IT Committee, 2019).

Standardization of fuel treatment descriptions should be the focus of future data integration projects. Due to a lack of financial and personnel resources, wildfire management agencies are having difficulties collecting fuel loading data. Without fuel loading data, fuel treatment descriptions are needed to provide clues on fuel reduction and structure change so that experts can better predict fire behaviours during risk assessments. Standardized fuel treatment descriptions will require all experts to be in agreement before asking agencies to apply them in practice.

## RECOMMENDATIONS

### Incorporate the NFM RDB into the CWFIF

#### Architecture

FPIinnovations recommends changing the fuel treatment component of the NFM RDB from a relational to geospatial database concept and multidimensional structure when incorporated with the CWFIF. No changes are required for the fire behaviour component.

During the development of the NFMRDB in 2014, direct data entry was identified as an important feature. This feature came with inconsistencies, duplications, and partial data. A relational database removed these issues. Also, it was hoped that the NFMRDB could provide a structure for data storage to the agencies who had no fuel treatment data depositories.

The purpose of fuel treatment data integration into the CWFIF is to provide data for analysis. A multidimensional database structure will be a better solution to achieve this purpose because it removes the needs of complicated queries for data analysis. Also, direct data entry into the NFMRDB is no longer a need because most agencies have developed their own fuel treatment data depositories. Data acquisition will be accomplished by transferring data from agencies' databases to the CWFIF's future fuel treatment data storage, without direct data entry.

BC, AB, NT, SK, and NS are using geospatial databases to store data. Records contain polygons to define the fuel treatment perimeters, except for PC. This kind of data structure will fit into a multidimensional model easily.

All tables and fields of the NFMRDB were identified during a workshop with agency representatives in 2015. All fields (Appendix 1) in "treatment\_site", "treatment\_site\_event", and "treatment" tables can be considered as attributes of the MSD30 under the new recommended structure. Other fields in "fuel\_load", "species\_composition", and "treatment\_resource" can be considered as attributes of the EDS.

The fire behaviour component should remain the same. AB, SK, NT, BC, and PC were voicing the importance of continuing to collect data on fire behaviour interactions with fuel treatments. They believe these fire behaviour records can provide important information on the effectiveness of fuel treatments in the future. The current structure of the fire behaviour component provides the benefit of a relational data model for future data collection and entry.

## **Current data**

FPIinnovations recommends that the CWFIF does not incorporate the current fuel treatment data of the NFMRDB but keep the fire behaviour data.

Wildfire agencies have original fuel treatment data in their own data depositories, so there is no need to incorporate the current dataset of the NFMRDB to create duplications. Plus, the current number of fuel treatment records is low, and the future structure is recommended to be changed.

The current fire behaviour data of the NFMRDB is recommended to be incorporated in the future CWFIF. These data sets are unique and not stored in other data depositories. In addition, the current fire behaviour data will not require any modifications because the future structure is recommended to remain the same.

## Improve data acquisition

FPInnovations recommends the following actions to improve data acquisition:

- Utilize the CIFFC data integration process to establish fuel treatment data standards.
- Invest in dedicated resources to consult data collections, establish transfer process, and update local data depositories with agencies.
- Invest in efficient fuel-loading methods.

The first recommended action to improve fuel treatment data acquisition is to establish fuel treatment standards. This will require input from risk assessment experts to ensure the data fit their needs. In addition, wildfire agencies are required to participate to ensure the standards fulfill their operational needs and data is practically collectable. A data integration project under the CIFFC data integration process is the recommended procedure to establish the fuel treatment stands.

The next recommendation is to invest in dedicated resources to consult field data collections, establish transfer process, and update data depositories with agencies after the data standards are established. The primary responsibility of the individuals who are currently managing agencies' data depositories is to support the operations of wildfire management agencies. They may not have the necessary combined knowledge in fuel treatment, database management, and geographic information systems. In addition, all data depositories are different among agencies in structure and existing data. Without external resources to help, the progress of implementing data standards and establishing data transfer procedures will be slow. Since the multidimensional data structure is recommended, dedicated resources are required to check quality of data to remove duplications, partial data, and inconsistencies during the data transfer process. A dedicated resource can be a person or a team to work with agencies.

Investing in efficient fuel inventory programs and innovative fuel data collection methods is recommended. During the interviews with Stockdale and Simpson, the experts expressed the need for detailed fuel structure, loading, and species composition for their analysis. However, the current fuel loading method (Alberta Environment and Sustainable Resource Development, 2014) is labour intensive and no longer practical for wildfire agencies due to agencies' budget constraints. Agencies and researchers are exploring lower-cost alternative methods with technologies such as photo, lidar, and drone imagery. Developing efficient, practical, and acceptable fuel loading methods for agencies is important for ensuring data availability and consistency for future risk analysis.

## Provide data for risk analysis

FPInnovations recommends investing in dedicated resources to monitor and enhance the quality of data. Any prediction and analysis done regarding risk require data with a high degree of accuracy to deliver valid results. Dedicated resources are needed to validate the data constantly to ensure the quality of data within the system. In addition, feedback from users and usage information should be tracked and monitored. A dedicated resource can be a person or a team to work with users.

# CONCLUSION

This report reviewed the NFMRDDB to determine how or if it can be incorporated into the CWFIF. FPIInnovations interviewed four risk assessment experts to gather the data requirements, interviewed representatives from seven wildfire agencies to understand their fuel treatment data depositories, and evaluated the current status of the NFMRDDB. The findings are as follows:

- The current utilization of the NFMRDDB by the wildfire management agencies is minimal, and the low number of records is insufficient to provide meaningful analysis.
- The risk assessment methods differ among risk assessment experts, and the data requirements of these methods vary. However, the experts agree on common required data fields:
  - fuel treatment area perimeters in geospatial polygons
  - treatment type
  - treatment method
  - treatment description
  - treatment date
  - original fuel type
- The current structure of the NFMRDDB meets most of the experts' data requirements; however, the treatment perimeter is not included as a data attribute. Adding the treatment perimeter will address a business need of the Emergency Management Strategy.
- NB does not apply fuel treatment within their jurisdiction.
- The status of fuel treatment data depositories is unknown in YK, MB, ON, QC, PE, and NL because they did not respond to the interview request.
- Fuel treatment data are stored in databases among surveyed agencies.
- The wildfire management agencies' fuel treatment data depositories are varied with different structures, fields, and data values.
- BC, AB, NT, SK, and NS are using geospatial databases to store data. Records contain polygons to define the fuel treatment perimeters, except for PC.
- AB, NT, SK, and PC store fuel treatment data in standalone databases. BC and NS store the data in large provincial systems.
- Internal staff within wildfire management agencies are using fuel treatment data actively. Most agencies do not provide access to the public.
- Only SK's data depository includes both municipal and county fuel treatment records; BC and AB have partial inclusion; NT and NS do not include either.
- The common data collected in the agencies' data depositories are:
  - treatment site
  - treatment area as polygon
  - treatment method
  - treatment description
  - treatment date



- The agencies do not have a data application/service interface in place to provide automatic on-demand external data access, but agree to provide data by request through manual compilation and file transfers.
- The CIFFC data integration process should be utilized to ensure fuel treatment data is interoperable.
- Standardization of the description of fuel treatments should be the focus of a future data integration project.

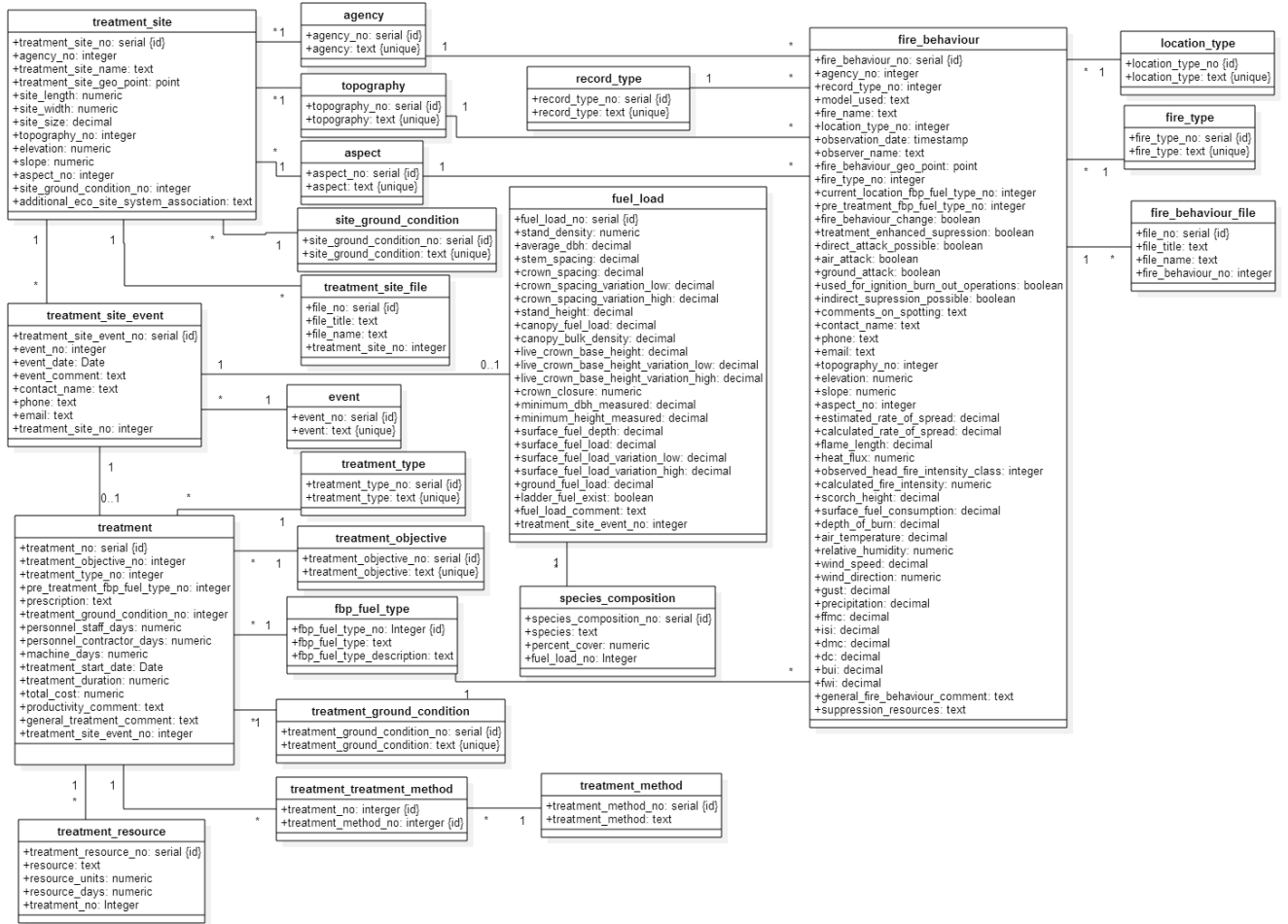
Based on these findings, FPIInnovations recommends the following steps for incorporating the NFMRDB into the CWFIF:

- Change the fuel treatment component of the NFMRDB from a relational to geospatial database concept and multidimensional structure when incorporated with the CWFIF.
- Retain the same structure for the fire behaviour component of the NFMRDB.
- Exclude the fuel treatment data within the current NFMRDB from integration to the CWFIF.
- Improve data acquisition in the future by:
  - utilizing the CIFFC data integration process to establish fuel treatment data standards
  - investing in dedicated resources to:
    - consolidate data collections and transfer processes
    - update local data depositories within agencies
    - monitor and enhance data quality
  - investing in efficient fuel inventory methods

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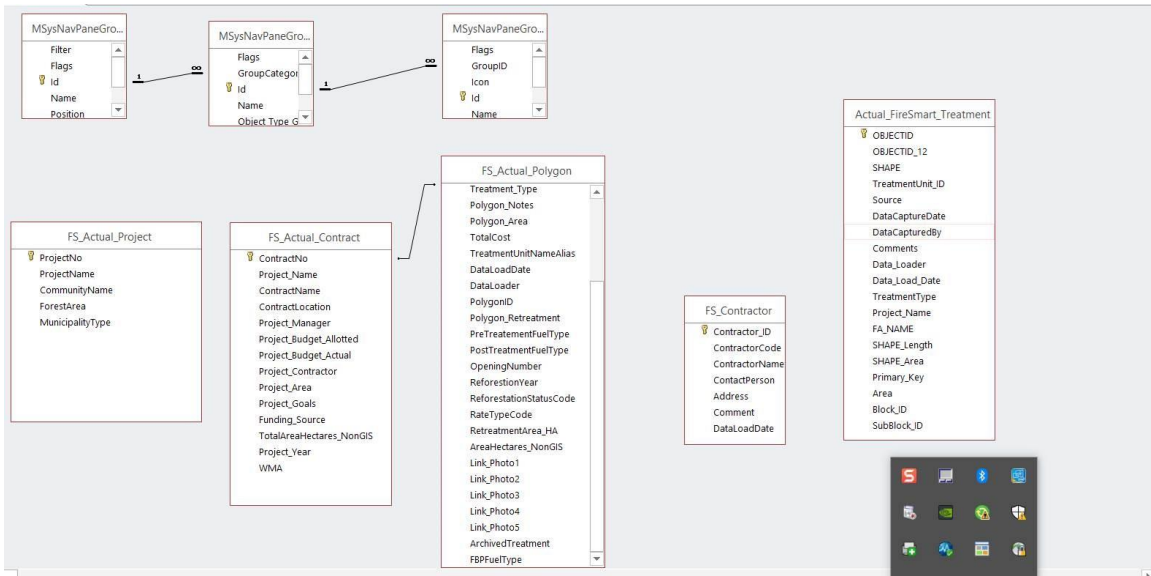
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# APPENDIX 1: THE NFMRDB DATA MODEL



# APPENDIX 2: SNAPSHOTS OF WILDFIRE AGENCIES' FUEL TREATMENT DATA DEPOSITORIES

AB



NT

Field	Value
OBJECTID	
Label	100
Status	Completed
Completion_Date	2014
Mod_Type	Fuel Removal
Mod_Method	
Description	Completed fire guard
Region	South Slave
Community	Enterprise
Area_ha	15.904932552559860
Perimeter_m	6329
Notes	35m wide
SHAPE_Length	0.073526559937041
SHAPE_Area	0.000026042676967

# SK

2018/2019					
Project	Name	Treatment	Who	Cost	Area Thinned
INAC	Kinoosao	Thin/Pile Burning			2.9
	Sucker River	Hand Thinning			2
	Clam Crossing	Hand Thinning			4.8
	Hall Lake	Hand Thinning			5
	Southend	Hand Thinning			5.8
	Montreal Lake	Hand Thinning			5
	Stanley Mission	Hand Thinning			2
	Grandmothers Bay	Hand Thinning			3
	Buffalo River	Hand Thinning			8
	LLRIB	Hand Thinning			20
	Eagle Lake	Hand Thinning			6
	11				<b>64.5</b>
Prov	Little Bear Lake	Hand Thinning			7
Prov	East Trout Lake	Hand Thinning			1.5
Prov	Little Amyot Lake	Hand Thinning			7
Prov	Jan Lake	Hand Thinning			7.6
Prov	Kimball Lake	Maintenance			9
Prov	Waterhen South	Hand Thinning			6.75

# PC

WRR Project Description	
<i>Park ID</i>	<input style="width: 100%;" type="text"/>
<i>Project Name</i>	<input style="width: 100%;" type="text"/>
<i>Date (YYYY-MM-DD)</i>	<input style="width: 100%;" type="text"/>
<i>Type of Event</i>	Treatment <input type="button" value="v"/>
<i>Treatment Method</i>	<input style="width: 100%;" type="text"/> <input type="button" value="v"/>
<i>Treatment Objective</i>	<input style="width: 100%;" type="text"/> <input type="button" value="v"/>
<i>Location (decimal degrees)</i>	<input style="width: 100%;" type="text"/>
<i>FireSmart Standards Applied</i>	<input type="checkbox"/> Fire pit evaluations <input type="checkbox"/> Pit relocations <input type="checkbox"/> Fuel reduction <input type="checkbox"/> Fire break <input type="checkbox"/> Relocation of combustible fuels from structures <input type="checkbox"/> Safe storage <input type="checkbox"/> Soil analysis <input type="checkbox"/> Priority zone 1 <input type="checkbox"/> Priority zone 2 <input type="checkbox"/> Priority zone 3 <input type="checkbox"/> Thinning <input type="checkbox"/> OWD Removal <input type="checkbox"/> Limbing and brushing <input type="checkbox"/> Landscape fireguard <input type="checkbox"/> Burn pile <input type="checkbox"/> Communication of Principles <input type="checkbox"/> Other
<i>Justification for not using FireSmart</i>	<input style="width: 100%;" type="text"/>
<i>FireSmart Area</i>	<input type="checkbox"/> Campground <input type="checkbox"/> Community Fire Break <input type="checkbox"/> Town Site <input type="checkbox"/> PCA Infrastructure <input type="checkbox"/> Private Infrastructure <input type="checkbox"/> Historical/Cultural Values <input type="checkbox"/> Indigenous Values <input type="checkbox"/> Environmental Values <input type="checkbox"/> Other
<i>Pre-treatment FBP Fuel Type:</i>	<input style="width: 100%;" type="text"/> <input type="button" value="v"/>

Comments on Target Area	<input type="text"/>
Size of Target Area (Ha)	<input type="text"/>
Completion	<input type="text"/> ▼
Outstanding Area to Treat (Ha)	<input type="text"/>
Completed Treated Area (Ha)	<input type="text"/>
Support Documents	Yes <input type="text"/> ▼ RPA's, Fuel Management Plan, Community Fire Break Plan, etc.
Completed Close Out Report Available	<input type="text"/> ▼
General Comments	<input type="text"/>

**Project Funding (Please capture costs per year, not the total cost for multiple years of the project.)**

A Base Cost Forecast G&S	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
A Base Cost Forecast S&W	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
A Base Cost Actuals G&S	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
A Base Cost Actuals S&W	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
B Base Request G&S	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
B Base Request S&W	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
B Base Cost Actuals G&S	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
B Base Cost Actuals S&W	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
Other Funding Forecast/Actuals	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)

Other Funding Forecast/Actuals Comments	<input type="text"/>
	Optional
Cost Recovery Actuals	<input type="text"/>
<b>Project Resources</b>	
Resource	<input type="text"/>
Units (#)	<input type="text"/>
Personnel Staff Days	<input type="text"/>
Personnel Contractor Days	<input type="text"/>
Total Cost	<input type="text"/>
<b>Maintenance (Please capture costs per year, not the total cost for multiple years of the project.)</b>	
Maintenance Requirements	<input type="text"/>
Maintenance Frequency	<input type="text"/>
Status	<input type="text" value="v"/>
Comments	<input type="text"/>
B Base Funding Required	<input type="text" value="v"/>
Annual Forecast G&S	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
Annual Forecast S&W	<input type="text"/> Please include full dollar amount (ex: 30,000 instead of 30k)
Treatment Site Files (Images, RPA/DAP, Close Out Report, etc.)	<input type="button" value="Click here to attach a file"/> <small>You may attach multiple files to this form. Please upload one at a time.</small>





[info@fpinnovations.ca](mailto:info@fpinnovations.ca)  
[www.fpinnovations.ca](http://www.fpinnovations.ca)

## OUR OFFICES

Pointe-Claire  
570 Saint-Jean Blvd.  
Pointe-Claire, QC  
Canada H9R 3J9  
(514) 630-4100

Vancouver  
2665 East Mall  
Vancouver, BC  
Canada V6T 1Z4  
(604) 224-3221

Québec  
1055 rue du P.E.P.S.  
Québec, QC  
Canada G1V 4C7  
(418) 659-2647