

Guide to Past Projects, Current Initiatives, and Future Vision for FREP Spatial Data

Prepared by Natalie Cushing, FREP GIS Co-op

The Forest and Range Evaluation Program (FREP) recognizes the importance of using a variety of tools, including maps, to communicate the program's achievements. This newsletter summarizes work undertaken to improve the quality and availability of spatial data describing FREP sample locations as well as the long term vision for integrating FREP Information Management System (IMS) with corporate spatial data tools.

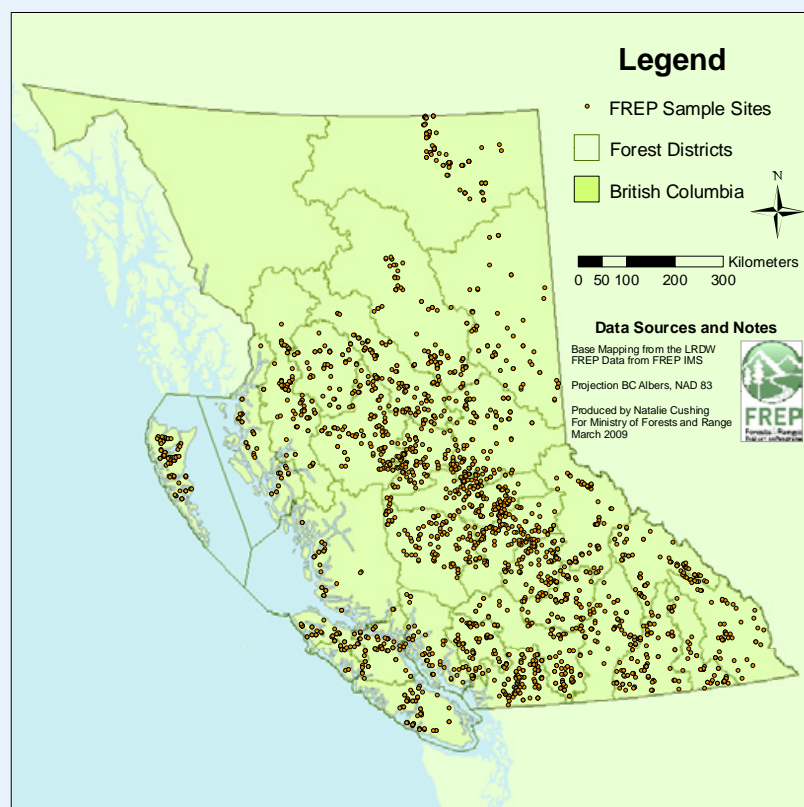


Figure 1. Forest and Range Evaluation Program sample sites for the years 2005 to 2007 for stand level biodiversity, riparian, visual quality, and water quality monitoring

FREP

Technical Guidance

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Summary of Winter 2009 Projects

In keeping with FREP’s commitment to continuous improvement, work is underway to improve the quality and accessibility of spatial data in our program. The first step in this process has been to establish communication among stakeholders and to assess requirements. This section summarizes three projects from winter 2008/09 that highlight that work.

Survey Results

Following are the results of a survey conducted to gather district feedback on current Geographic Information Systems (GIS) use and mapping needs. More detailed results can be found on the [FREP GIS Resource Centre SharePoint site](#).

Based on the responses to the survey, the major uses of mapping by FREP staff are district level pre-season planning, opening level planning, and internal communications. However, as indicated in [Figure 2](#), improved access to spatial data would also fulfill an identified desire to incorporate mapping into post-season data analysis and external communications.

At present time, the data for this mapping work is accessed primarily from the LRDW and local drives. While the majority of respondents had a GIS technician in their office, half of these technicians do not work on FREP projects at this time.

The most popular formats for distributing spatial data were identified as PDF maps and shapefiles. Respondents showed a preference for 11x17 and poster sized maps at the district and opening scale. MapView was the most popular option for accessing FREP spatial data, followed by FREP IMS.

The key finding of the survey was that there are two distinct groups of GIS users in FREP. The first has basic knowledge of Global Positioning System (GPS) and GIS. This group tends to access spatial data through MapView and prefers to receive maps as PDF documents. This group’s top requests were more communications, maps and access to FREP data through MapView.

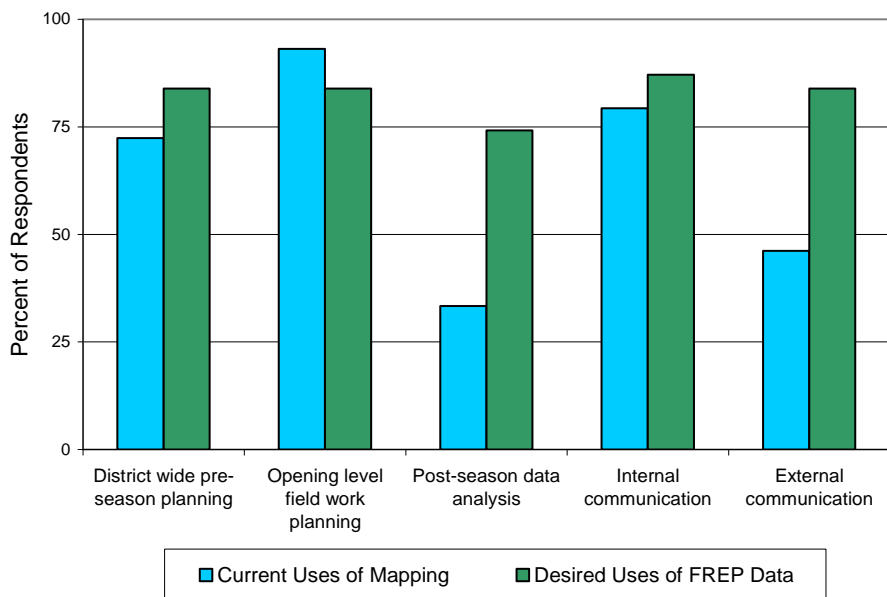


Figure 2.
2009 Survey Results
Showing Current Uses
of Mapping in FREP.
Compared with
Desired Uses of
FREP Data

The second group of GIS users in FREP has a significant level of training in GIS through post-secondary education or employment.

These users tend to access data through the Land and Resource Data Warehouse (LRDW) and local drives, and works primarily in the GIS Terminal Server (GTS) environment. This group wants to access FREP data in shapefiles, and requested advanced GIS tools like random point generators and map templates.

Ongoing data distribution and communication projects will incorporate the needs of both identified user groups.

SharePoint Up and Running

The creation of a new SharePoint site for FREP GIS users was a cornerstone of this winter's work. The site is called the [FREP GIS Resource Centre](#) and can be accessed through the main FREP SharePoint site or the MFR SharePoint Site Index.

Currently this site is being used by Branch to post GIS related announcements and to distribute documents and data. This will continue to be the main resource for accessing FREP maps and GIS manuals created or distributed by Branch. This site is will also be used to share spatial data with FREP staff who do not have GTS access.

The FREP GIS Resource Centre is also designed to facilitate sharing of GIS information, documentation, and data developed by district staff. A key reason for creating the SharePoint was to draw on and promote the knowledge that already exists in district offices. The discussion boards in particular can be a great tool for networking, learning about ArcMap and MapView functionality, and building a reference of questions and answers.

Accessing FREP Data

FREP spatial data is available from two sources: the [FREP GIS Resource Centre SharePoint site](#) and the Marble drive (which should be considered the main source of FREP spatial data). To access data through the Marble drive (usually mapped as W:\\marble\\work), go to [W:\\FOR\\VIC\\HFP\\Library\\FREP Data](#). This FREP Data library will hold all geodatabases and maps developed for the districts. As additional tools such as map templates and models are developed, they will also be included in the FREP Data Library.

It is recognized that those who do not have GIS Terminal Server (GTS) access are likely unfamiliar with the Marble drive. However, everyone can upload shapefiles into MapView. For these users, basic FREP shapefiles are available on the FREP GIS Resource Centre SharePoint in zipped folders. To view the shapefiles, download and extract the folders to a local drive, launch MapView, open the Upload Shapefile tool, and browse to each of the three files requested in the dialogue window (.dbh, .shp, .shx). See the [MapView Manual](#) for more information on uploading shapefiles.

PDF Maps Reviewed

Draft district scale maps showing FREP sample points to date were created from UTM coordinates entered in FREP IMS. Figure 3 shows one example of the maps created. PDF copies of the maps were made available on the FREP GIS Resource Centre SharePoint and district staff were invited to review the accuracy of the mapped sample points and the overall look of the maps.

In the four weeks allowed for feedback, 26 districts responded. Most of the suggestions were implemented – the maps are certainly more accurate and better looking as a result! Perhaps the most significant result of the review process was the recognition of the need for separate maps for validation and communication. A validation map template has since been designed and implemented.

Final versions of the maps will be available on the SharePoint site this spring. These are basic maps showing where FREP has been and are intended for use as communication tools. Those wishing to use FREP spatial data for more detailed mapping or analysis can access the data through the W:/Work on Marble drive. Contact your GIS technician or Branch for more information.

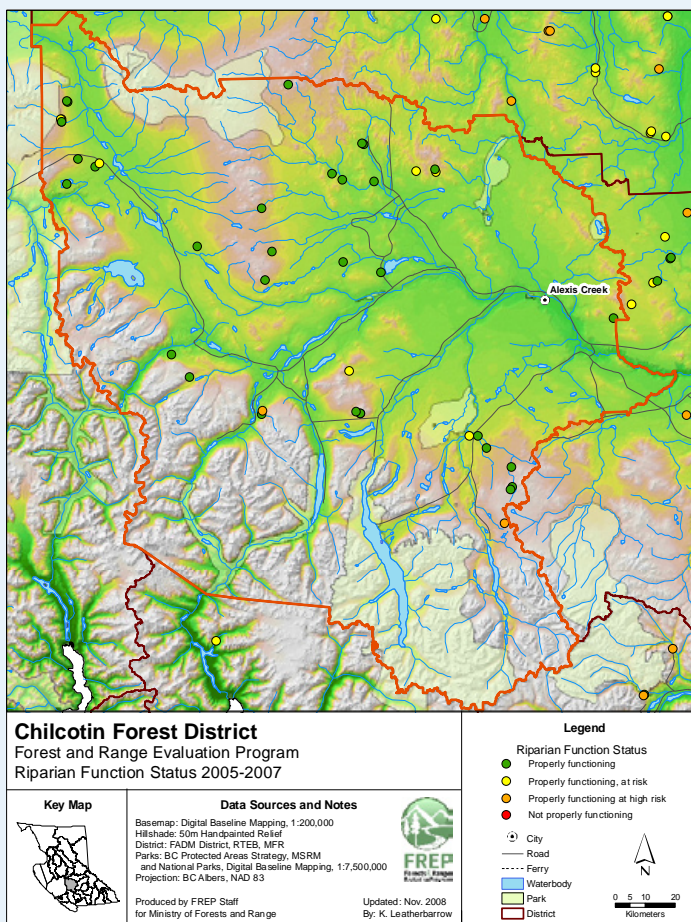


Figure 3. An Example of a Draft Map Distributed to Districts for Review

Focus on the 2009 Field Season

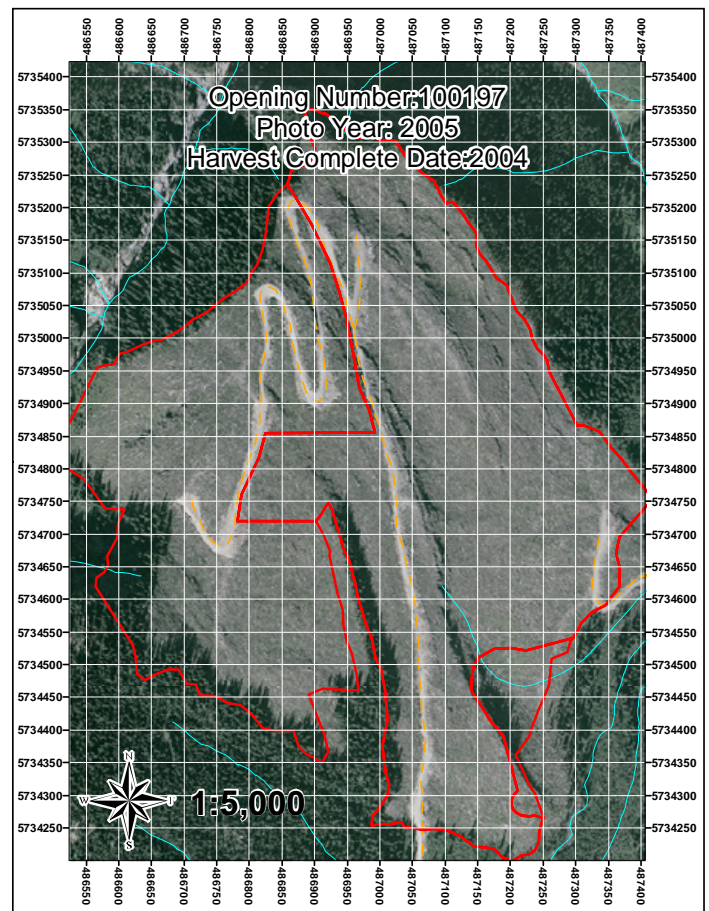
Short term goals for FREP's spatial data focus on providing district staff with additional resources to collect and input the highest possible quality spatial data. The emphasis for the 2009 field season is on the following three initiatives:

Creating Opening Maps with Orthophotos and UTM Grid

The FREP GIS Assessment survey showed that opening level planning and field work is a major use of GIS mapping in FREP. High quality opening level maps aid all aspects of field work, but are particularly important for collecting and validating coordinates. Two techniques offer increased ability to validate coordinates in the field and are already in use by several districts (see figure 4):

1. Drawing opening boundaries over digital orthophotos: Both MapView and ArcMap can be used to create maps with orthophotos.
2. Drawing UTM grids over digital orthophotos: Gridlines at the appropriate scale can only be added in ArcMap. Gridlines can be labelled with UTM coordinates for use in selecting random points, locating random points in the field, and accurately recording coordinates on field cards.

*Figure 4.
Map with
Orthophoto
and
UTM Grid*



See the [GIS/GPS Procedures Manual](#) on the FREP GIS Resource Centre for more information on grid lines and orthophotos. Please see the text box on this page for more information on accessing orthophotos.

Finding Orthophotos

Digital orthophotos are available through both MapView and ArcMap. In MapView, an orthophoto mosaic can be found in the Grids and Imagery folder in the Layers tab. This coverage is patchy for the coast and the northwest corner of the province.

Orthophotos can also be accessed from ArcMap through either the British Columbia Imagery WMS,

or through the O: drive. To access orthophotos through either method, use the Add Data tool. For the British Columbia Imagery WMS, look in Catalogue > GIS Servers > British Columbia Imagery WMS on openmaps. When looking in the O drive, navigate to [O://airborn/ortho_tiles](#). This folder is arranged by year, UTM zone, and mapsheet.

Recording Accurate UTM Coordinates in the Field

While post-season validation of spatial data will always be important, it is most efficient to collect accurate coordinates and enter them correctly into FREP IMS. Therefore, FREP field staff are the first and most important part of creating accurate spatial data.

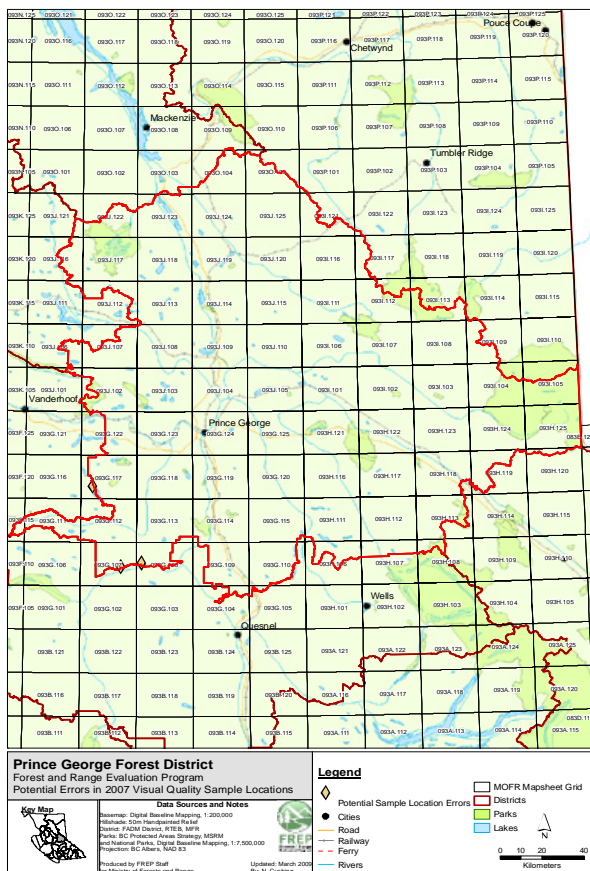
To create high quality spatial data, keep these points in mind this field season:

- Most FREP sample points are collected in UTM
- Visual quality sample points are collected in Latitude and Longitude
- UTM coordinates include a zone, a six digit easting and a seven digit northing
- Latitude and longitude should be in degrees:minutes:seconds with seconds given to the nearest hundredth, also known as decimal seconds

A reference sheet for spatial data which expands on these points has been created and is available on the [FREP GIS Resource Centre SharePoint](#).

Bear in mind that the accuracy of the coordinates collected by your geographic positioning system (GPS) will depend on the quality of the satellite coverage. An opening map with a UTM grid can be used as a reference to validate GPS coordinates in the field when satellite coverage is poor.

Validating Spatial Data



For the 2009 field season, increased responsibility for FREP data validation will be turned over to the districts. This presents an opportunity for district field staff to check the accuracy of the spatial data before it is entered into FREP IMS.

To validate sample coordinates, MapView should be used to verify accuracy against opening boundaries or other landmarks. In MapView, open the 'Silviculture' view during validation. Use the 'Navigation' tab to validate each set of coordinates by using 'Zoom to UTM Coordinate' or 'Zoom to Geographic.' It is recommended that a scale of 1:10,000 be used for validation. If the point is incorrect, use additional layers, orthophotos, and field notes to find the correct coordinates.

Figure 5.
A draft validation map to aid districts in confirming the locations of their sample points

Vision For Spatial Data In FREP

The work done this winter has gone a long way to standardize and distribute FREP spatial data, build communication among GIS users, and provide mapping and communication tools to districts. However, we can go much further to integrate and communicate FREP spatial data in the future. Here are the three major goals and ongoing projects for FREP spatial data from a Branch perspective.

Automated Spatial Validation

Plans have been made to include basic automated validation of spatial data in a future release of FREP IMS. These updates will eliminate many commonly noted sources of error but will not replace validation by district staff. As time and funding allow, the following updates are proposed:

- Automatically launch MapView to the coordinates entered
- Restrict UTM easting and northing values to the correct number of digits
- Restrict zone and UTM coordinates to the possible range for the district indicated

Ideally, coordinates could be checked against data in spatial databases linked to FREP IMS. [Figure 6](#) shows two layers that could be used for basic spatial validation: UTM zones and district boundaries.

Custom Views In Mapview

In 2007, requirements were gathered for a FREP view in MapView. This view would include default layers and a menu of optional layers. The layer symbology would be designed to aid FREP staff in selecting openings from the district random list and conducting pre-field season mapping. The FREP IMS Users Working Group is still interested in pursuing this project, but must balance it with other priorities and budget constraints. On a positive note, any delays in this work will allow resource values added to FREP IMS since the initial requirements gathering to be incorporated into the final product.

Share Your GIS Expertise on the FREP GIS Resource Centre SharePoint Site

The work presented here is summary of work done this winter in Branch. However, we also want to acknowledge all the innovative GIS work that is ongoing in regional and district offices.

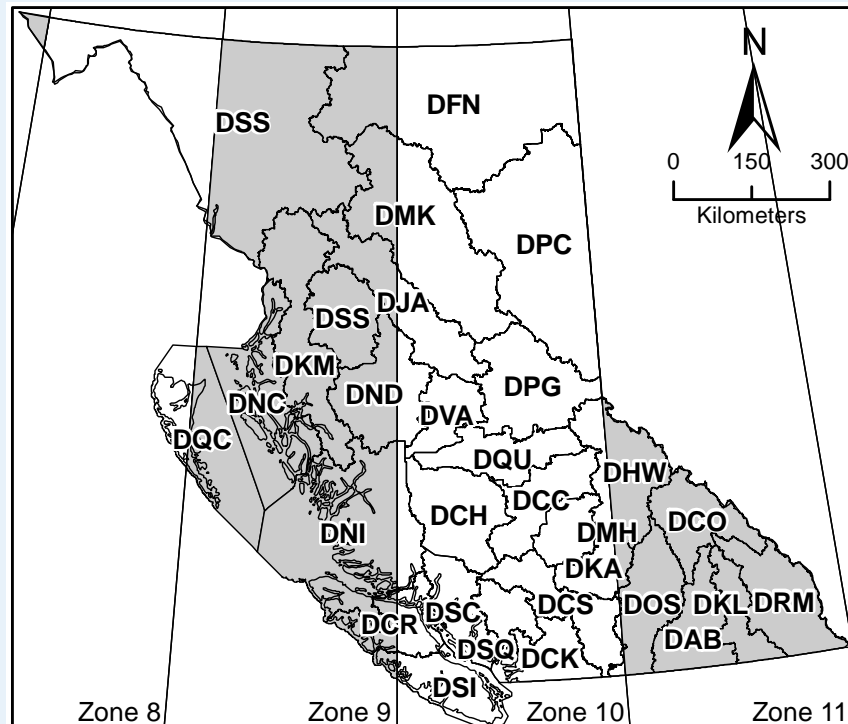
If you have a tip, technique, or great data source, please post it on the [FREP GIS Resource Centre SharePoint](#) for all to see. Likewise, if you have a question, post it on the SharePoint discussion boards to see if your fellow GIS users can help you out. We are particularly interested to hear about models and scripts that are being used. The FREP GIS Resource Centre SharePoint site is there for you to share your knowledge and learn from others.

Land and Resource Data Warehouse

Even before the survey results were in, it was clear from informal communications with branch and district staff that there is a desire to access FREP data through the Land and Resource Warehouse (LRDW) and to view FREP data in MapView. Submission of FREP data to the LRDW is the long term goal for the program and initial work is underway to achieve this goal.

It is important to note that the requirements for creating a spatial database from FREP IMS and linking it to the LRDW are complex. The level of priority for this added functionality will be balanced with other requests by the FREP IMS Working Group and project managers. Interim means of distributing data are being implemented: all FREP staff will be able to access shapefiles through

the [FREP GIS Resource Centre SharePoint site](#). GTS users are encouraged to access data through the `W:\work on marble drive` at `FOR>VIC>HFP>Library>FREP Data`.



*Figure 6.
Two spatial layers against which FREP sample points could be checked:
UTM zone
and district boundaries.*

Acknowledgements

The work done to improve the quality and integration of FREP's spatial data has been a team effort. Many people have given their time, energy, and expertise to these projects. In particular the following peoples' work is gratefully acknowledged: [Alanya Smith](#), [Andrew Riecker](#), [Attila Gereb](#), [Diane Millar](#), [Frank Barber](#), [Gilbert Richir](#), [Joel Graboski](#), [Kate Leatherbarrow](#), [Leslie McAuley](#), [Matt Leroy](#), [Peter Bradford](#), [Steve Baumber](#), [Susan Elo](#), and [Thomas Chen](#).