BC Forest and Range Evaluation Program
Barber and Bradford
Slide Notes April 23, 2008 EPA Seattle

Slide 1

- I'd like to say thank you to the organizing committee for inviting Frank and I to present today. And thank you for coming to hear about the BC Forest & Range Evaluation Program and our efforts to influence through collaboration and information sharing.

- It is a great honour for us to present to such talented people who work for such a prestigious and important agency.

- Frank and I will be tag-teaming our presentation. I'll start off with an overview of our program, Frank will then talk specifically about quality management and I'll finish up with some specifics about our communication and how we influence through collaboration and information sharing.

- A few points as we get started, throughout our presentation you will hear reference to the acronym FREP – that stands for the Forest and Range Evaluation Program. Secondly, you should have received a four panel handout that roughly follows today's presentation.

Slide 2

- We'll start with a few quick British Columbia facts and social context.

- BC is slightly larger than the combined areas of Washington, Oregon and California.

- 2/3 of the province is forested -- British Columbia's forest lands are roughly equal in area to about 80% of the combined US national forests.

- 95% of BC is Crown land — or what you may more commonly call -- state owned lands

- 13.5% in protected areas.

- On the economic side – the BC forest industry accounts for about 15% provincial economy and 14% of the jobs.

- Ecologically, BC has the greatest diversity of plants and animals of all Canadian provinces.

- Every year approximately 6000 cutblocks covering some 150,000 hectares are harvested in BC – that's equivalent to 280,000 US football fields. That size of footprint leaves a lot of potential for impacts from forest harvesting.

- If you overlay the many ecological, spiritual, cultural and economic values that come from our forests that we are attempting to balance over a huge public landbase, you can see there is a challenge of ensuring long-term ecological and economic sustainability with meeting the needs of society today.

- Our premier has committed that BC will lead the world in sustainable environmental management. FREP is a primary tool for ensuring we meet that goal.

Slide 3

- In 2005, BC began to move from a prescriptive legislation process where, for the most part, licensees (those who harvest timber) were told what to do as well as when and how to do it — to a results-based regime, where licensees now have significant freedom to manage. This is a fundamental change to land management in British Columbia.

- However, along with this freedom to manage, licensees will be held accountable for their results. Two of the primary mechanisms for evaluating results will be C&E and FREP.

Slide 4

- Government has set objectives for 11 key resource values identified under legislation. These values include biodiversity, fish habitat, visual quality, wildlife and cultural heritage. Frank has just put up a poster listing all 11 values.

- The objectives of our programs are to:
  - determine if forest practices are achieving government stated and implied objectives for the 11 resource values,
  - assess the effectiveness of legislation itself (including the objective statements and other possible barriers to success),
  - Identify implementation issues, (e.g., policy conflicts that force poor ecological choices)
  - Identify continuous improvement opportunities for forest and range policy, practices, legislation.

- In support of our program objectives, FREP has developed the following mission statement. The key part of which *is providing the science-based information needed for decision-making and continuous improvement….*

- FREP is designed around following six key steps -- questions-indicators-data collection-analysis communication-implementation.

- Let's talk briefly about the first 3 of these steps. For each of the 11 values we have identified, through input of many partners and stakeholders, what key questions we should be trying to answer. Each question links back to the government objectives for that value, including sustaining the health of that resource value.

- Here is an example of the SLBD question: ……

- So that's the first step, the second step is to determine appropriate indicators. This was done in consultation with SH and partners --including government and academic scientists.

- These are some of the key indicators used in our biodiversity monitoring……..

- Another example question, this time social versus ecological value, is CHR. For the CHRes, the focus is on values important specifically to First Nations (more commonly referred in the US as American Indians). This is the question we are trying to answer.

- The development of these CHRV process indicators, has been highly collaborative and in full partnership with First Nations.

- Under CHRV, we are also working with First Nations to develop specific outcome indicators and methods to measure specific physical or land based concerns of First Nations peoples.

- The third step in our six stage evaluation process is collecting data: a few key points here just before handing off to Frank –

- * we use random selection of pre-defined sampling populations to ensure statistical rigour

- * The majority of our data is collected by trained field staff in 29 districts located throughout the province.

- * over the last several years, we have collected:
  > 1000 streams,
  > 1000 cutblocks for stand-level biodiversity,
  > 300 visual landscape assessments,
  > as well as soils, water quality, cultural heritage, range, recreation, worker safety and wildlife assessments.

- So, Frank will take over now and talk about how quality management is integrated into our program.

Quality Management in the Forest and Range Evaluation Program – Frank Barber

I have been asked to talk about Quality Management. My talk will give a brief overview of the components of Quality Management, namely Quality Assurance, Quality control and data quality in our program.

Quality management **provides an overall framework for an organization; in our case, the FREP program.**

- **The success of our program is having a Quality Management Strategy based on the key principles outlined in the National Quality Institute's (NQI) certification process and linked directly into the 6 strategic themes in our program's 5-Year Strategic Plan**

- **It's also about having a quality culture to achieve the highest quality standards possible, and**
- **A strong driving force in our Ministry of Forest and Range executive supporting our program**

The FREP 5-Year Strategic Plan was peer produced and endorsed by our Executive in 2007 and is reviewed on an annual basis to assess how well the program is working to meet our strategic themes. Embedded in these themes are specific quality principles and criteria that provide direction and objectives (or deliverables) for our program. These themes are:

1. **Clarity of Priorities**
2. **Leadership**
3. **People Focus**
4. **Program Development and Implementation**
5. **Continuous Improvement and Critical Reflection**
6. **Communication or Influencing Change through Collaboration and Information Sharing (which is the theme of this conference)**

The National Quality Institute is an internationally recognized non-profit organization that works with companies in Canada to build organizational excellence and a healthy workplace. The National Quality Institute awards the "Canada Award for Excellence" on an annual basis by our Governor-General of Canada. This award is the Canadian equivalent to the United State's Malcolm Baldridge Award for the National Institute of Standards and Technology.

At this point in time we have achieved Level 2 of 4 towards our NQI certification. We will achieve level 3 this summer.

***Quality assurance* –We have or are in the process of documenting all business processes for all key activities within our program. I would like to focus just on those key processes linked directly to our data and FREP Information Management System.**

On the data side some key processes are:

- **Checklists development – For each of the 11 resource values we pose a question about that resource value we want to answer. The answer to the question provides an assessment of how well that resource value is being maintained or functioning. Resource value checklists contain specific indicators used to assess the status of a resource value at one point in time as well as trends over time. The development of a resource value checklist goes through a rigorous scientific, peer-reviewed process to fine-tune the use of the best indicators that most accurately assess the impact of a silvicultural activity, usually harvesting, on that specific resource value. These checklists are then piloted for at least two years before they are implemented operationally. During this pilot period the checklists are further refined to address additional operational needs of field staff.**

- **Resource Stewardship Monitoring checklist training is the actual training of the resource value checklists once they are ready for implementation. This is the first key step to ensuring the highest overall quality of data is being captured within our program. We conduct various types of training such as**

    - **train the trainers – this is the initial training of contractors and key field staff on the various resource value checklists**
    - **RSM checklist training – is where these trainers now train other field staff on resource value checklists. This training may be complete training for staff that have never used these checklists. These sessions may be in a classroom, in the field, or a combination of both. Refresher training is also conducted on an annual basis to ensure field staff are aware of any changes to checklists or address any areas of the data collection process they are weak in. On an annual basis we also conduct mentor training. Mentor training is the trainers working with field staff for a few days actively involved in collecting resource value data. Fine-tuning field staff skills and knowledge. Field staff in our districts are also encouraged to mentor other staff.**
    - **We have established training sites around the province where field staff come to for training. The resource values have been pre-measured prior to training and field staff compare their measurement results with the trainer's to assess how well they are doing. These sites may change on an annual basis to limit resource value degradation (too many people on one site for too long) as well as provide resource values with various features or issues.**
    - **Feedback from training sessions are a critical source of continuous improvement for our training as well as quality assurance**
    - **Training may also be tailored to reflect local features or conditions**

- **We also conduct Quality assurance site visits – the trainer or other subject matter expert re-samples some of the plots and sampling units for "on-the-ground" first hand accuracy verification. On a yearly basis, we conduct between 10 and 30% re-sampling.**

- **On a monthly basis we hold a Resource Stewardship Monitoring (RSM) conference call to discuss questions and/or issues raised from field staff and other program members to be addressed by the resource value team leads and other subject matter experts. These questions and answers are posted on our FREP web site.**

- **On an annual basis we conduct a 2-day Continuous improvement session with field practitioners, team leads and other program members to discuss lessons learned (what went well, what didn't), share results and best practices and focus on how we can improve next year. All materials from this session are also posted on our web site.**

- **On an annual basis we also produce a quality status report using quality indicators in various surveys. For example, the Continuous Improvement session and the RSM training satisfaction surveys provide valuable feedback on how well we are training our field staff, their engagement in the program and commitment to capturing the highest quality data possible. The average ratings are tracked annually to show trends and identify areas for improvement.**

On the Information Management System side we:

- **For the development of our FREP Information Management System (FREP IMS) we follow our Systems Development Life Cycle (SDLC) which culminates in a "Lessons Learned" session after each release of the system into production. The SDLC is a Quality Assurance protocol developed by our Information Management Group to ensure the highest quality systems are being built based on Lessons Learned knowledge gained from the development of other systems.**
- **Tools within the SDLC include: a detailed signed off Requirements Gathering document (this is what the client – our field staff, say they wanted); a Detailed signed-off Design document (the details on how this system will be built); a prototype for review by field staff (the clients) to confirm this indeed is what they want, prior to the actual build; and, rigorous systems testing by actual users, and a Lessons Learned session after the release of the system into production.**

- **We also have an Information Management System (IMS) working group that meets on a regular basis. This group is comprised of actual field staff who is also the system users. These users have full engagement at all stages of the development, testing, and implementation of the system as well as active participation in the Lessons Learned after each release of the system into production.**

- **We also meet twice annually with our IMS working group and the team leads and other subject matter experts to discuss our Annual Planning cycle. This annual planning cycle helps identify pinch-points in the development of checklists, training and implementation and the upgrading of our system to capture those changes.**

Quality control **looks at the technical aspect of "on-the-ground" day-to-day processes. The key quality control in FREP is our data management process. This is how we deal with the physical paper checklists and the data in our Information Management System.**

The process steps are:

1. **Data collection by field staff. Complete, refresher, and mentoring training ensures field staff collect the appropriate data as accurately as possible to the standards required**
2. **Data validation - is checking to make sure the correct data was entered on the cards properly. Data validation, using our data validation protocols, is conducted on 30-100% of the completed checklists**

3. **Data entry – the field staff that collect the data usually also enter the data into our FREP IMS from their district office. Last year, the first year our system was ready for data entry, 22 of 29 districts entered their own data. Those districts that did not enter their data, either due to time or staff shortages, made copies and forwarded their paper checklists to headquarters for data entry. Data entry for these checklists was completed by university Co-op students and/or headquarters staff.**
4. **Data verification is conducted on 100% of the checklists. This assures our data entry accuracy.**
5. **Data cleaning is conducted by the team leads, trainers, and other subject matter experts using root-cause analysis to analyze the real cause of the data errors**

- **Our IMS contains key edit rules within each screen of the application as indicator data is entered and again when saving the data. In addition, our system has business rules to ensure all the indicator data is entered correctly and completely when the "submit checklist" button is pushed**
- **We are currently working on an internal data management audit process looking at those processes associated with data, starting at the checklist development, training, data collection stages on through to analysis and reporting out on the data. This audit will provide valuable feedback for continuous improvement of our system and data quality.**
- **In 2005 a third party independent audit was conducted by the Forest Practices Board. This audit provided valuable feedback and recommendations on the development and implementation of FREP. To formalize this process we are currently developing an independent audit protocol for our program that will be conducted every 2-3 years.**

One example of *data quality* is the use of a data quality software package adopted by our Information Management Group for all ministry systems. The FREP IMS is being used to see how well this software works.

- **We are in the process of entering all our existing business and edit rules in this data quality software. Once in we will be able to monitor the data inside the data base and generate a report card on how well our business and edit rules are working.**
- **We also have the ability to run this software and see the impact on data in the data base by adding, deleting or making revisions to existing business and edit rules prior to incorporating these rules into the actual system**
- **Overall, this tool gives an annual report card and a trend that displays the data quality level over time.**

This has been a very quick introduction to Quality Management in our FREP program but we take our data quality very seriously. We are building a creditable scientific evaluation program that will ensure that practices, policies and legislation work towards the sustainable management of all our resources values in British Columbia.

New Slide

- Thank you Frank!

- Building a quality culture in FREP by striving for excellence in each of the six steps, will help ensure we do it right the first time.

New Slide x 2

- As you can see from this slide, we have developed a comprehensive business process for taking the information collected through monitoring in order to use that information to inform, influence and in some cases, force continuous improvement of forest and range policies, practices and legislation.

- The details of this process are not what we want to get across in this presentation. The main points I'd like to discuss, are what is within the oval -- this describes what we actually do with the monitoring and evaluation results information once we have it.

New Slide

- This slide shows the detail from the oval on the previous overhead.

- The slide illustrates that there are 2 primary streams in which the results of monitoring are utilized. The top box describes informing change to local practices and the bottom boxes describe changes to forest legislation.

Slides of photos

- While I describe these two streams in more detail, we'll continue with the slide show of our field staff doing their monitoring across BC.

- Let's deal with informing change to the stewardship culture and local practices

- Much of our monitoring information will inform and influence professional reliance, forest management plan approvals and overall enhancement of knowledge and information sharing. Our goal here is to ensure we get data, results, analysis and continuous improvement guidance to the field that is relevant to their concerns and practical with respect to their operational realities.

- The information we provide must be of the highest quality and timely. You can see 2 examples (on page 2 of your handout) —one for biodiversity and one for riparian. Both examples illustrate how monitoring results can lead to continuous improvement based on informed decision-making.

- In the case of SLBD, most of our stewardship concerns fall into two categories: (i) leave more long pieces of coarse woody debris intact (greater ecological value through the rotation) and (ii) leave slightly larger WTPs. to provide greater protection for important ecological attributes such as large dead and dying trees.

- In terms of riparian management, while our monitoring has identified that 85% of the small streams in BC are properly functioning, three key factors have been identified as causing forestry-related impacts on 15% of small streams: (i) sediment into streams (roads), (ii) physical damage to stream banks (yarding), and(iii) levels of retention (shade and organic nutrients).

- If we can address theses points through changing local practices, we could come close to eliminating forestry-related impacts from logging on small stream in BC.

- Another communication strategy that we are developing—a client-based communication team. This team, in large part, signifies a key strategic approach our program and the theme of this talk.

- We look to our clients, stakeholders and partners to help us define what we need to evaluate (that's our evaluation questions), how we should evaluate (our indicators), and how to best communicate the results of the monitoring and evaluation.

- By doing this we will not only achieve our mission — to provide the science-based information needed for decision making and continued improvement of British Columbia's forest and range practices, policies and legislation, but we will also help ensure our work and resources result in meaningful change.

- At the provincial-level, one of our key communication initiatives will be the Chief Forester's FREP report. This report will be a brief compilation of monitoring and evaluation results to date for all 11 resource values. The tone of the report will be *"this is what we evaluated, this is what we saw, what we think it means and some considerations for professionals in the continuous improvement of forest practices."*

- By keeping the document concise and in a tone of enhancing knowledge versus in a tone of absolute directions, we hope to develop a province-wide, multi-stakeholder readership and engagement. The report will link back to more detailed analysis and reports and provide contact information for individual resource specialists.

- The key is to get timely, accurate and relevant information directly to those who can influence change at the local or district level. With this enhanced knowledge, local resource managers will develop better plans and implant better practices.

- While we strongly believe that the most significant impact our monitoring and evaluation can have is influencing at the local level, there may come times where people resist change on significant enough issues that formal government policy or legislation will need to change. That's where the second stream of information sharing comes in.

- FREP is designed such that the rigour of FREP data and analysis will be used in the development of future evidence or science-based policy change. This process has been built directly into the legislative change and development model. Where monitoring results indicate the need to change legislation, this change will occur.

- There are many other communication initiatives we could discuss -- Listed on the last page of your handout are a number of other FREP tools and examples and recent publications – all are available on our website.

- In closing, in our communications, as with the rest of our program, we have strived to sue the best planning practices – including a team-based approach to ensure our data, reports and recommendations are reliable, credible, defensible, affordable and most importantly, that they get used to influence the continuous improvement of forest and range practices in British Columbia.