Responses to Black Hills National Forest Timber Stakeholder

questions, concerns, challenges and assertions

The following is a collection of questions, concerns, challenges and assertions made during our April 3rd meeting, subsequent meetings and conversations and submitted to the National Forest Foundation. As agreed, Black Hills National Forest staff, in collaboration with staff of the Rocky Mountain Research Station and the Northern Research Station Forest Inventory and Analysis group developed the responses below. The intent of the responses is to answer the questions, address concerns, and provide responses from the data and analysis to challenges and assertions.

It is our expectation that these responses and associated documents will resolve questions on the data and draft GTR and allow for our collaborative conversation on the future of the Black Hills timber program to move forward.

Questions are arranged by those from the April 3rd stakeholder meeting, followed by questions submitted to NFF. The source of the question is noted, and answers follow in bullet points. At various points in this document are references to additional, more detailed responses (associated documents) that are part of this package.

Timber Stakeholder Meeting on 3 April 2020

Questions about the nature of the GTR and peer review process (multiple)

- The GTR is a draft, not final document, has already undergone internal peer review, and is currently undergoing a blind external peer review.
- There is more data and better data that has been subjected to the most rigorous scrutiny and evaluation than any other National Forest in the United States.
- The FIA data set has strong correlation to common stand exam data collected on the Forest.
- Challenges to the findings of the GTR should be subject to equally rigorous review and meet same rigor.
- FIA has interacted with numerous stakeholder consultants who have asked for assistance with the data in order to conduct their own analysis.

Can the public comment period for the GTR be extended (J Neiman).

- Based on this request, the public comment period for the GTR has been extended to 1 May 2020.

The GTR is based on false/unsupportable or incorrect assertions (made by multiple stakeholders).

- This is a generic criticism and without any specific, science based assertions or challenges that could be evaluated.

The GTR scenario development was completed without input from stakeholders (VanVlack).

- The GTR is the product of an independent science-based, peer-reviewed analysis of the FIA data and other published research to address the questions raised by the stakeholder group and does not represent an agency decision.
- The scenarios developed and utilized by the authors represent a range of plausible variable settings.
- Scenarios include a range of outyear standing volume recovery examples.
- Additional scenarios can be developed. Recommendations for additional or alternate scenarios for consideration in a Final GTR should be submitted to the Rocky Mountain Research Station through their public review process which has been extended until May 1. Requests for additional or alternate scenarios to discuss at our May 1 stakeholder meeting may be submitted to the Forest.
- The Forest has requested alternate scenarios to be available for the May 1 meeting.

Why do some of the FIA plots have 2020 date codes (B Wudtke).

- This implementation of the INVYR (Inventory Year) attribute varies by region, and differences are reconciled within FIA's compilation algorithms. Those plots measured by RMRS crews and assigned INVYR 2020 would have been completed in 2020 but were done ahead of schedule as part of the intensification, and the attribute code was not changed to indicate actual year as opposed to intended year.

Concerns expressed regarding negative growth shown in the 25 to 26.9" diameter class and in changes in tree height (B Wudtke).

- The most accurate way to estimate change is to use FIA's "Accounting Method." This creates credits and debits in each cell as trees grow into and out of diameter classes. Overall negative growth within a diameter class may be observed as a result of this accounting if there are relatively few trees in the estimate or any time a pattern of stand dynamics results in more growth out of a given size class than is accumulated.
- Additionally, tree height is a difficult attribute to measure. One of 4 trees in the 25" - 26.9" diameter class had a large measured "loss" of tree height resulting in a large negative growth for that tree as well as the whole diameter class. Overall negative growth in this particular diameter class is an artifact of a very small sample size in that diameter class.
- FIA staff assessed the impact of this tree on *overall* growth estimates. Removing this tree from the database does not change the overall growth estimate significantly (see below). The published data tool facilitates transparency and can be used to reproduce these estimates with and without the tree.
  Est sawlog gross growth WITH the tree (95% CI): 150,694±23,629 CCF
  Est sawlog gross growth WITHOUT the tree (95% CI): 152,422±22,526 CCF
- FIA measurements of tree height changes in the new inventory data have a mean height GAIN of 1.1 feet over the remeasurement period.

Use of Forest Health aerial survey work not used to estimate mortality/volumes (G Josten).

- It is true that the Forest Health Protection (FHP) aerial survey results differ from the FIA estimates. The FHP aerial survey is an observational survey, and it is not structured to create estimates with associated levels of uncertainty. Additionally, the scale and time frame differ from FIA because the mission is different. FHP focuses on intra-seasonal changes for pest damage assessments to be used by the landowner for control and mitigation. FIA is a longer-term assessment for management of the forest resources over time to support sustainable forest management.

Selection of variable settings in the 6 scenarios – mortality set too high (G Josten)

- Mortality rates are variable over time, a scenario with mortality set at 0.26% (typical background level) still shows current harvest rates are unsustainable.
- Realistically while the Black Hills may not see a MPB epidemic for a while, there will likely be additional wildfire, especially given the current fuel complex, meaning mortality levels are likely to fluctuate. Fluctuations above a minimal background rate of 0.26% further degrade the sustainability of the current harvest program.
- 100 years of growth data support use of a 2.51% gross growth rate.

Why are there structural stage objectives in the amended Forest Plan (multiple stakeholders).

- Structural stage objectives reflect a desired condition for ecological diversity on the landscape and to capture the historic range of variability.
- The objectives were developed in response to litigation following publishing of 1997 Forest Plan.
- The Forests commitment to meeting structural stage objective were a key factor to resolve litigation in 2005.

Comment during stakeholder presentation about the GTR being 'loose science' (B Wudtke).

- The draft GTR has been subjected to internal peer review and is undergoing external blind peer review – the highest academic and intellectual standard.
- Proven and well accepted scientific rigor applied to data and analysis
- The GTR is based on data Wudtke and other stakeholders agreed in 2017 would be collected.
- FIA data and analysis is statistically robust and defensible
- The FIA data and analysis and GTR provide the data to make informed decisions about our program.

Comment on Black Hills National Forest commercial timber ASQ "deficit" (B Wudtke).

- ASQ stands for allowable sale quantity, a term from the 1982 Forest Planning Rule.
- ASQ is an estimate of potential maximum commercial timber yield from suitable lands over a ten-year period and does not represent a promise, commitment, duty or contract.

- The Black Hills National Forest ASQ was developed for the 1997 Forest Plan when forest conditions were very different from today, principally considering the estimated standing volume in 1997 was 13 million CCF, while today it is estimated to be 5.9 million CCF.

Assertion about the Forest having a 'reduced timber program' (B Wudtke).

- Since the 1997 Forest Plan (23 year) average total program is 186,474 CCF/yr (with the 2000 anomaly removed).
- In the last10 years the average total program is 203,137 CCF/yr.
- These levels are similar to the 30-year average from 1970-1999 of 199,139 CCF
- Average harvest from the prior 30-year period 1940-1969 was 108,574 CCF

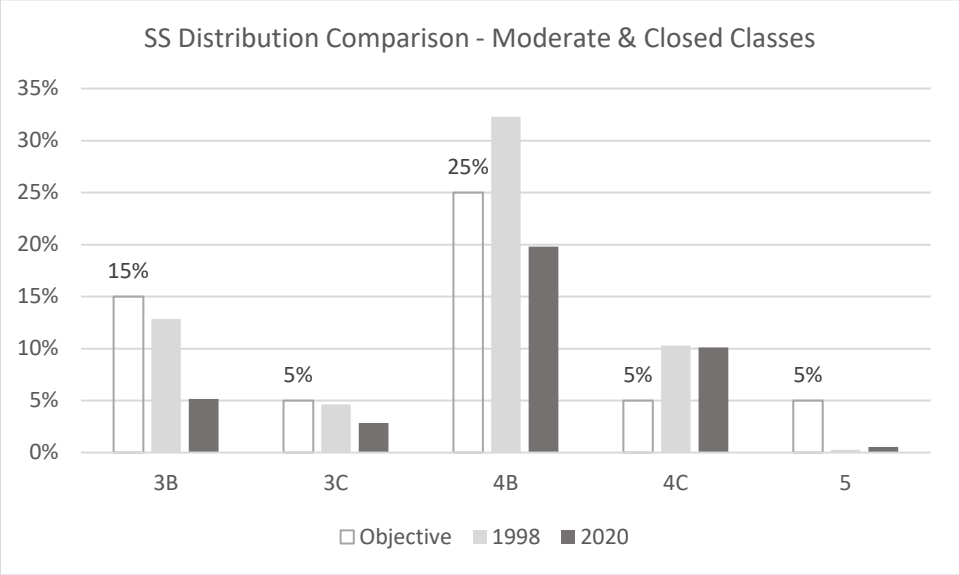
Comment on restoration means returning to 1874 conditions (B Wudtke).

- The Forest Service has not advocated for 1874 conditions as the restoration goal for the forest, nor have any of the stakeholders.
- This condition would also not be consistent with Forest Plan direction regarding wildlife habitat and the prescribed structure stage distribution.

Forest remains vulnerable to beetle mortality (many comments).

- The forest is currently at low risk for a mountain pine beetle epidemic in comparison with conditions at the time of the 1997 Forest Plan. Historical records indicate that the forest will remain at low risk for at least another 20 years (see Draft GTR page 5).
- The total area for moderate and closed canopy structural stage classes (3B, 3C, 4B, 4C, 5) is **below** 1998 levels by 22% and structural stage distribution objectives by 16%.

  Comparison of structure stage distribution, 1998 – 2020, moderate to closed canopy cover classes, ponderosa pine, Management Areas 4.1, 5.1, 5.4, 5.43, 5.6.



- Structural stage 3 (1-8.9") is currently 16% where forest plan calls for 40%.
- Structural stage 4 (9"+) is currently 68.7% when forest plan calls for 55%.
    a. BHRL decision targets SS 4a, looking to reduce from 38% to 25%.
        i. Approximately 500,000 CCF standing volume might be available over 100,000 acres.
    b. SS 4c is at 10% - forest plan calls for 5%.
        i. SS 4b/4c represents best potential to develop future SS 5 where we are significantly deficient.
        ii. Harvesting in 4c using CE category NEPA in WUI.

Acres used for analysis are notably different from Forest Plan (many comments).

- Understand that National Forest land ownership acres and designations are not constant over time; changes occur due to forest plan amendments, land conveyances (sales, exchanges and purchases). Suitable acres change as a function of land use designation, for example the establishment of a research forest or research natural area.
- Forest Plan acreage numbers represent land title and management direction, generally not biological potential or vegetative cover.
- The difference in the values you are referencing is due to terminology. Suitability as used by the Black Hills National Forest is defined as "…lands suited or not suited for timber production…" This is not the same as the FIA definition of timberland. The 1997 Forest Plan did identify 865,890 acres of suitable land. This value has been updated to about 836,000 acres of suitable land. However, this does not mean all that land is timberland or even forest land, as FIA defines it.
- Two documents are included that address this issue: *1 – Comparison of Forest Inventory Analysis and FSVEG Area Estimates Suitable and Accessible Timberland,* 2- C*omparison of 1997 Forest Plan Revision Phase II and FSVeg inventory area estimates, Black Hills National Forest*. The second document was developed to provide additional information based on a request from Ben Wudtke.
- Understand that there are differences in how FIA and the forest classify non-forest or regenerating areas and that these differences will not affect overall volume estimates.

Post Meeting Questions submitted to the National Forest Foundation

Dave Mertz (submitted by email to Ben Irey, April 9, 2020)

If a scenario uses 0.26%, isn't that basically saying that the scenario predicts that there will be no disturbances such as the Jasper Fire or the recent MPB epidemic, for the next 50 years? Is that realistic? The 0.26% came about when the level of disturbance on the Forest was quite low. Can we really expect that for the next 50 years? Is that wise?

- Based on historical data and research it is unlikely that the mortality rate over the course of several decades would remain as low as 0.26%.
- Scenarios display possible futures, preferably three: a worst case, best case, and middle, detailed in the draft GTR. Scenario-based land management planning should not be confused with these timber management alternatives.
- Please consider submitting this feedback to the Rocky Mountain Research Station through their public review process which has been extended until May 1.

The GTR says that lands inaccessible and inoperable were included in the suitable timberland acreage of 765,733 acres. Can we be provided with an approximate acreage number for the inaccessible and inoperable lands? If this number is significant, wouldn't this skew the scenarios and make them more optimistic than they should be?

- Black Hills National Forest Silviculturist Jeff Underhill addresses inventory estimates in a document, *3 -Sawtimber Inventory Estimates by Slope and Land Class* . This document is included in this package and posted online with all other stakeholder documents.
- This is likely a reference to on the ground site specific conditions that are not captured in forest level planning efforts. Inaccessible forestland, topography that prevents tractor or cable logging (timber suitability code 721), are withdrawn from the tentatively suitable timber base. Uneconomical areas such as steep slopes (timber suitability codes 820, 821), areas with road construction problems (timber suitability code 823), and isolated patches of forestland (timber suitability code 824) are also subtracted from the tentatively suitable timber base.
- The inclusion of unsuitable base acres in a scenario would affect model results based on volumes included. The greater limitations to inclusion of unsuitable base related to subjective factors related to market conditions, technology investments, and regulatory restrictions related to environmental analysis, road building, and Section 106 heritage clearances.

I don't believe that the higher mortality percentages should be used at the beginning of any of the scenarios. The MPB epidemic is over and that should be reflected in the scenarios. They should use a flat percentage from the start for a number of years unless the scenario predicts for some reason that the mortality will go up over time.

- The initial mortality setting reflects the latest data point reported from the FIA survey. The value established for mortality over time in each of the scenarios is adjusted based on research, historical records, and predictions.
- Please consider submitting this feedback to the Rocky Mountain Research Station through their public review process which has been extended until May 1.

The greatest long-term threat to a healthy Black Hills National Forest, is the doghair thickets of regeneration across the Forest. This needs to be recognized in the GTR. The FIA data shows that the structural stage 4C stands (which are at high risk to MPB and fire) only make up 10% of the suitable timber base. While that needs to be managed, 10% is not a significant risk, certainly not compared to the thick understories.

- Although pre-commercial thinning treatments (PCT) were not incorporated into the growth and yield scenarios, the GTR does discuss the potential benefits of PCT (see pages 4, 21, 22, and 23). PCT could increase residual tree growth rates, shorten the time in which trees become merchantable, and make forests more resistant to mountain pine beetle attack and wildfire, reducing mortality rates over time.
- This comment is outside the scope of GTR. Submit official comment to GTR review by the 1 May deadline.

  See other RMRS GTRs for discussion on MPBs and stand tending, such as:

  1) Graham, Russell T.; Asherin, Lance A.; Battaglia, Michael A.; [et al.]. 2016. Mountain pine beetles: A century of knowledge, control attempts, and impacts central to the Black Hills. Gen. Tech. Rep. RMRS-GTR-353. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 193 p.

  2) Graham, Russell T.; Asherin, Lance A.; Jain, Theresa B.; Baggett, L. Scott; Battaglia, Michael A. 2019. Differing ponderosa pine forest structures, their growth and yield, and mountain pine beetle impacts: growing stock levels in the Black Hills. RMRS- GTR-393. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 102 p.

It has been stated that proper forest management could reduce the mortality in the future and in the scenarios. It must be recognized that the Black Hills NF was one of the most managed, if not the most managed Forests in the National Forest system, and we still had large fires and the MPB. Stating that forest management will solve our future problems is only partly true and should not be used as a basis for using a very low mortality figure. The Forest has traditionally received funding for 5,000 acres or less a year of pre-commercial thinning per year. Assuming that funding will go up in any significant way is simply not realistic and should not be used as a reason for an optimistic mortality percentage.

- Current forest timber stand improvement needs are 219,648 acres. A minimum program level of 32,000 acres per year is necessary to reduce this backlog over the next decade. Since 2011 annual needs have increased by an average of 10,000 acres while annual treatments have averaged 10,000 acres. Traditional funding sources at contemporary program levels such as reforestation trust funds (RTRT), watershed restoration funds (NFVW), and Knutson-Vandenburg funds for sale area improvement activities (CWKV) are inadequate to support this level of timber stand improvement work.

The standing inventory numbers in the GTR were developed through standard FIA protocols. The stakeholder group should accept those numbers. If someone cannot accept those numbers, there should be a fairly high bar for them to hurdle if they want to refute them.

- Comment/assertion, no reply required.

With a goal of consensus from this group, members need to seek common ground. There needs to be an acceptance of some "givens" (such as standing inventory) in order to move forward. Once the GTR is finalized, after having gone through a scientific peer review and a comment period, there should be general acceptance of the report. If there are still those that have problems with its content, then they should be able to clearly state their position and be able to back it up, preferably with published research. Their positions should receive considerable scrutiny.

- Comment/assertion, no reply required.

Anything presented by members should utilize CCF and not board feet. We need to have common information.

- Comment/assertion, no reply required.

Any charts or graphs presented by members of the group should be clear and referenced. The methodology should be easily explained. They should not be able to "roll their own" and then expect people to take it seriously.

- Comment/assertion, no reply required.

Bob Burns/Norbeck Society (submitted email to Ben Irey, April 10, 2020)

To have the data in the General Technical Report (GTR) used as "best available science", we would have to also apply what we know about climate change -- what factors concerning climate change will be imposed on the data so decisions made are based "on the best available science"?

- The draft GTR is not meant to be inclusive of all “best available science” for informing Forest Planning and management of the Black Hills National Forest. Along with climate change, science addressing game and non-game wildlife, old-growth, watershed function, recreation, domestic livestock, wildland urban interface, Native American concerns, urban encroachment, and a host of other issues will need to be addressed as the Black Hills National Forest moves ahead with planning and developing management alternatives.
- Given the short time horizon requested in the analysis, climate change modeling was not incorporated into the growth and yield scenarios however future conditions that may increase weather and fire related mortality were considered during mortality rate selection. The mortality rate of 1.04% is considered conservative whereas the historically low rates of 0.16% (1962, trees ≥ 5 inches dbh) and .026% (1984, trees ≥ 5 inches dbh were not considered for this reason (see pages 18-19).
- Please consider submitting this feedback to the Rocky Mountain Research Station through their public review process which has been extended until May 1.

More than once, the GTR mentions the issue of too many small trees, and the need to employ more thinning of these and to use more prescribed burning to manage the forest? Can the scientists add scenarios that show future yields with and without thinning and burning, i.e. what happens to future yields if the young trees are allowed to just grow like they are (climate change figured in)?

- While it might be a great approach, the suggestion represents a more in-depth analysis requiring FVS modeling. This type of analysis was discussed by forest leadership in 2018, but the approach was not pursued as the requested analysis was short-term in nature, and thus is outside the GTR original intent.
- Please consider submitting this feedback to the Rocky Mountain Research Station through their public review process which has been extended until May 1.

- Scenarios display possible futures, preferably three: a worst case, best case, and middle, detailed in the draft GTR. Scenario-based land management planning should not be confused with these timber management alternatives. While it might be a great approach, it is a more in-depth analysis requiring FVS modeling.

What resources are needed for the Forest Service to be able to catch up and keep up with the thinning of young trees, and for it to be maintained concurrent with the pace of logging?

- To meet the precommercial thinning needs we would need funding (current average cost per acre is $284), qualified staff to supervise contract implementation, and a broad-based review of stands/units we would like to treat to achieve the best future outcome.
- Current forest timber stand improvement needs are 219,648 acres. A minimum annual program level of 32,000 acres per year is necessary to reduce this backlog over the next decade. Since 2011 annual young stand thinning needs have increased by an average of 10,000 acres while annual treatments have averaged 10,000 acres.

It was mentioned that the new Planning Rule doesn't allow for an ASQ. How will "sustainability" be determined under the new planning rule?

- Section 219.11 includes timber requirements based on the National Forest Management Act (NFMA). The term ''allowable sale quantity'' (ASQ) is a term of art of the 1982 rule. The term ASQ is used in the NFMA in discussions about departures that exceed the quantity of timber that may be sold from the national forest (16 U.S.C. 1611). However, the NFMA does not require that the term be used in the implementing regulations (16 U.S.C. 1604). The term has caused confusion about whether ASQ is a target or an upper limit under the 1982 rule procedures, the Agency wanted to avoid this confusion under this final rule. Plans drafted under the 2012 rule will have an upper limit for timber harvest for the quantity of timber sold as required in §219.11(d)(6). The requirements in §219.7(f) that plan content must include information about the planned timber sale program and timber harvesting levels, and in §219.11(d)(6) that the plan must limit the quantity of timber that may be sold from the national forest to that which can be removed annually in perpetuity on a sustained-yield basis, provide a more practicable way to give direction than using the term ''ASQ.''

In this current fiscal year, what is the volume sold so far and what is the target? How many acres will be sold?

- As of 14 April 2020, the Forest has sold 26,376 CCF of sawtimber and other products.
- Our FY2020 target is 197,000 CCF total program and the ability to deliver is contingent upon budget, staffing, COVID19 responses, and this sustainability dialog.
- We have estimated that a 197,000 CCF program would require 35,751 acres sold.

How many of the acres sold or to be sold this fiscal year are of old growth* or nearly old growth? *characterized by very large trees (16+ inches DBH). Trees at least 160 years in age (or approaching that) in either dense stands or in open "park-like" stands.

- The 1997 Forest Plan defines old growth, stands of trees generally greater than 16 inches dbh and greater than 160 years old, as structural stage 5. The Forest is not planning to treat structural stage 5 stands. Treatments under the BHRL decision are being planned and implemented primarily for structural stage 4A stands. Approximately 15% (51,000 acres) of the forest stands that are classified as structural stage 4A and found in Management Areas 4.1, 5.1, 5.4 5.43, and 5.6 have a very large tree component (> 16" dbh). The planned 2020 sale area that contains a very large tree component is determined when timber sale preparation is complete.

In this current fiscal year, how many acres are to receive non-commercials thinning (TSI)?

- Approximately 6,000 acres are planned, 4,426 acres have been awarded to date at a cost of $1,256,182 ($284 acre)

In this current fiscal year, how many acres have received Rx burning? How many acres are still planned for this FY?

- As reported by Black Hills Forest Fire Management Officer Jason Virtue to the National Forest Advisory Board on 15 April 2020, this FY we have broadcast burned 64 acres (Bearlodge Ranger District). We were planning to burn 1,600 on Hell Canyon Ranger District, but due to weather conditions we had to postpone the burn.
- We have stopped all prescribed fire activity as part of our response to COVID-19.
- We have burned 1,629 piles representing 2,610 acres this year.

Ben Wudtke, Black Hills Forest Resources Association (submitted email to Ben Irey, April 10, 2020)

We request a GIS shapefile of the suitable base as described in the Forest Plan to compare to our records. Additionally, we request a GIS shapefile of the current suited base, along with a complete spatial accounting by means of GIS data of areas that have been removed from the suitable base that was established in the Forest Plan.

- GIS shapefiles will be provided by the Forest and posted to the public accessible web page.
- A document specific to this request is provided with this response document. The title of that document is *2- Comparison of 1997 Forest Plan Revision Phase II and FSVeg inventory area estimates, Black Hills National Forest*

How many acres of timberlands (as defined by FIA and represented in the 2016 FIA data) outside of the suited base were harvested between FY 2000 and FY 2016? How many additional acres have been harvested outside the suited base since 2016?

- Acres harvested from the unsuitable lands:

• Years	• Acres
• 2000 - 2016	• 27,856
• 2017 - 2019	• 4,141

- Acres were derived from a comparison of the Timber Harvest from forest activities spatial layer (FACTS) and the Suitability codes from the 2015 FSVeg spatial layer. The 2015 FSVeg layer was selected for comparison since this layer was provided to FIA to determine the land class of plot locations during the inventory design.

Who has reviewed the GTR and who is expected to review it as part of the internal and peer review process?

- Internal Forest Service reviewer's names are available from the Rocky Mountain Research Station and can be found in the Peer Review Plan at https://www.fs.usda.gov/rmrs/bhnftimberreport. Blind peer reviewer names are not revealed, consistent with the nature of a blind peer review. The blind peer reviewers are external to the Forest Service.

What comments have been submitted regarding the GTR as a result of the internal and peer review process? This is a request for a copy of the comments.

- Officially submitted review comments and a reconciliation report of those comments will be made public, according to the requirements of the Data Quality Act. The comment period is still open so comments are not available at this time.

Blaine Cook, Forest Service Retiree (submitted by email to Ben Irey, 8 April,2020)

Will US Forest Service commit to making decisions on:

1) FIA data and reports are accurate?
   - Beginning in 2016, the Forest leadership committed to a shared stewardship approach to charting a path forward for our commercial timber program. That included a commitment to collect and analyze a specified set of data. That data and analysis is now available and the stakeholder conversations we have started will culminate in a decision about future output.
2) Selection of timber program level using GTR as a management guide?
   - Beginning in 2016, the Forest leadership committed to a shared stewardship approach to charting a path forward for our commercial timber program. That included a commitment to collect and analyze a specified set of data. That data and analysis is now available and the stakeholder conversations we have started will culminate in a decision about future output.
3) Forest plan revision initiation?
   - The Forest Supervisor has tasked a working group from the National Forest Advisory Board to provide advice about whether we initiate Forest Plan revision and if so, when.
4) Items 1, 2 and 3 are decided by May 27, 2020?
   - While decisions about future program output are necessary based on the information we are discussing, there is not specified date for reaching that decision.
5) If you cannot commit to questions 1-4, then please describe how and when the US Forest Service will make a decision on how to move towards a sustained yield timber program?
   - Our path forward is we remain committed to a shared stewardship approach and robust dialog in moving to an informed decision.