MEMO
To: Hank Phibbs, Teton County Commissioners
From: Natural Resources Technical Advisory Board (NRTAB)
Date: November 18, 2014
Re: Teton County Commissioners Focal Habitat Feature Progress Report

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Preface:
The goal of the Focal Habitat Feature Identification Project is to accurately map and describe crucial habitat features in Teton County based on the best existing wildlife and vegetation data. This project is the essential first step toward updating any environmental regulations in County code and in particular the existing Natural Resource Overlay. This project follows directly from policy 1.1a in Teton County's recent Comprehensive Plan, "to protect focal species' habitat based on relative critical value." It aims to meet strategy 1.1.S.2 in the Comprehensive Plan to "evaluate habitat importance, abundance and use to determine relative criticalness of various habitat types." To that end, this Focal Habitat Feature Identification Project has already compiled a wide array of data in order to map and describe important habitat features in our county for use by the Planning Department. This project combines several methods of characterizing wildlife-habitat relationships including attempting to develop new tools to bring together diverse data into a unified layer that illustrates the relative habitat value of different locales within the county.

Below, we provide an update on the progress of the project to date, explain some challenges that NRTAB and the contractor have faced and outline a way forward to ensure that this important project is completed in a useful timeframe. The NRTAB strongly believes this project will result in valuable information necessary for effective ecosystem stewardship. Recent challenges associated with executing this project should not diminish the validity and imperativeness of the overall objective: to accurately map and describe critical habitat based on the best available data.

We address these items requested by Hank Phibbs, Teton County Commission liaison to the NRTAB:

1. What is the current status of the Focal Habitat Feature Identification Project?
2. Why is the project currently over-budget and over-schedule?
3. What is the best estimate of additional time needed to complete the project?
4. What is the best estimate of additional budget needed to complete the project?

Current project status
Task A (Compile Available Wildlife Data) is complete, including the development of a comprehensive vegetation layer.

Task B (Develop a Classification System for Focal Habitat Features and Valuable Matrix Features) remains partially complete. Biota has produced a focal habitat feature layer for mule deer winter range using high-quality data provided by Teton Science Schools. Additionally, Biota has provided a proof-of-concept approach for identifying a focal habitat feature layer for data sets which are less robust in quantity and quality. The output from both of these methods may be used to help create a final habitat features classification system. Development of the final classification system remains incomplete.

Task C (Map and Describe Focal Habitat Features and Valuable Matrix Features) remains incomplete. Biota produced a proof-of-concept focal habitat feature map including mule deer, trumpeter swan, and sage grouse on September 11. This pilot technique will be fully vetted as more species data are analyzed.

Why is the project currently over-budget and over-schedule?

The Teton County Focal Habitat Feature Project is currently over-budget and over-schedule as a result of various challenges encountered by both Biota and the NRTAB. The first task of the project, collecting wildlife datasets from various public and private agencies and organizations, proved to be more time-consuming and costly than Biota had planned. Biota reported that wildlife data collection was mostly complete at the March 7, 2014 NRTAB meeting, and efforts were to be directed towards Task B, developing a classification system for focal habitat features and valuable matrix features.

Since this time, much of Biota's effort has been directed at developing an approach to create focal habitat feature layers from the wildlife datasets that meet the goals of Tasks B and C. A major challenge of the project is developing an end-product that is novel in conservation and planning, and thus lacks pre-defined methods that can be easily applied. The NRTAB and Biota agreed that it was appropriate to explore a modeling technique that is commonly used for this type of analysis called resource selection function modeling. Biota obtained Dr. John Kie, Bluesail LLC, a well-published expert in this field, as a subcontractor to contribute to the specific modeling effort. Dr. Kie introduced the modeling approach in a report on February 18, 2014, then presented this material at an NRTAB meeting on March 7, and followed with an in-depth report on April 11, detailing methods and preliminary results. This report was discussed during the April 18 NRTAB meeting, and it was noted that Dr. Kie was satisfied with results and planned to proceed with the approach.

Unfortunately, Biota's efforts to apply this analysis method to wildlife datasets have been unsuccessful, with time and budget dedicated towards these efforts greatly limiting the overall progress of the project. Based on the published resources and expertise available to Biota, and the positive progress reports received in April, the NRTAB had a general understanding that Biota was making progress on developing layers for mule deer and additional species using this approach. However, Biota has encountered various obstacles to successfully applying this technique to meet the goals of the project.

The specific reasons as to why the approach was unsuccessful have not yet been provided to NRTAB in detail, and there has been a general lack of effective communication between NRTAB and Biota over the summer of 2014 while modeling efforts were pursued. In part, the NRTAB was not explicit in providing specific, directed tasks to Biota. However, given Dr. Kie's support and direction, NRTAB assumed that Biota was moving successfully forward with this analysis.

The NRTAB did not receive clear notification that Biota's work had not been progressing towards project goals until September 17, and efforts to pursue alternative approaches have only recently been initiated. The project contract provided that Biota facilitate meetings with NRTAB as necessary to complete tasks, and the NRTAB feels that Biota could have notified board members at an earlier date as to the obstacles that were encountered. Additionally, the NRTAB became increasingly aware of the budget and schedule situation, with some members expressing urgency as to the need to consider different data analysis approaches. However, the project has unfortunately not moved forward as planned.

What is the best estimate of additional time needed to complete the project?

Using a professional level understanding of ecological principles, conservation biology, and the available, historical wildlife reports and data sets for Teton County, the attached methods and resulting products could be performed and completed for review by the Planning Department within 6 months, by June 30, 2015, by Biota working with NRTAB. These products can serve as a guide for creating land development regulations, transportation and infrastructure planning, strategic mitigation and restoration processes, and cumulative effects tracking.

What is the best estimate of additional budget needed to complete the project?
The NRTAB respectfully leaves this conversation between the County and the contractor, Biota.

Endorsement
The NRTAB endorses a continued working relationship with Biota if certain obligations are met. Given budget over-expenditures, an overdue deadline, lack of outreach to NRTAB and a general lack of deliverables, NRTAB recommends retaining Biota only if the County and Biota are able to resolve the current budget and deadline issues and provide a solution to moving ahead. If a resolution is met on these accounts, NRTAB will actualize effective communication and methodological strategies with Biota, as described in this memo. We suggest that the hiring of an alternate contractor would increase the time and resources commitment beyond reasonable limits. Hence, we suggest continuing with Biota.

Brief description of Proposed framework for completion of Focal Habitat Feature Identification Project [For more in-depth description of work to be completed and timeline, as approved by NRTAB, see attachment]

1. Create species and guild predictive layers using wildlife data and landscape variables (vegetation/habitat, slope, aspect, etc.) and expert opinion
2. Combine these layers into Focal Habitat Features, which will represent the highest ecologically important tier in Teton County
3. Develop connectivity descriptors for the lands that are not classified as Focal Habitat Features that use geometric classifications (e.g., patch size, distance to nearest Focal Habitat Feature), ecological factors (e.g., migration routes, offspring rearing areas) and expert opinion to determine tier level for the matrix in between Focal Habitat Features (the Valuable Matrix Features)
4. Combine the above outputs into a cohesive, tiered map product
5. Prepare final report

Attachment: **Biota's Proposed Timeline For Completion of Focal Habitat Feature Identification Project**

Biota's Proposed Timeline For Completion of Focal Habitat Feature Identification Project

The intent of the following narrative is to provide a succinct timeline and efforts associated with completion of the Focal Habitat Feature Identification Project within a 6-month timeframe and assume work will commence **January 1, 2015**.

Focal Habitat Features

Task 1 Use existing data developed through Task A of the FHF project to generate species associations with vegetation, and abiotic thematic layers, including slope and aspect; distance to water; and a distance to roads. Point locations from unique wildlife species or guild datasets will be queried in GIS to derive vegetation covertype, sin aspect representing "eastness", cosin aspect representing "northness", elevation, distance to water, distance to roads, and slope. Vegetation mapping from Cogan Technologies will be used in the initial 65-category resolution and then compared to the Biota binned vegetation suite previously presented to NRTAB.

This component of the project will be completed by Biota by **February 2, 2015**.

Task 2 NRTAB reviews first draft FHF maps. Effort will include interaction between Biota and NRTAB to define comprehensive ecological functions on a per species basis. This collaborative effort should require no more than 2 weeks by NRTAB. All verifications/revisions of the first draft FHF maps will be returned to Biota by **February 16, 2015** for preparation of Final Draft FHF maps.

Task 3 Biota will integrate recommended changes to FHF maps by **February 27, 2015** and return to NRTAB. Biota will develop a spreadsheet and accompanying text of the following parameters:

- Key ecological functions
- The key ecological features that support the functions
- The key ecological relationships among and between other focal habitat features
- The list of physical zones and features of ecological importance not captured within Focal Habitat Features delineation for consideration within the matrix of tiered ecological importance

Task 4 Task Final FHF refinement may include peer-review consultation with area biologists. Dissemination of FHF maps (with spreadsheet and accompanying text) will be the responsibility of the NRTAB. NRTAB will provide FHF maps with suggested changes to Biota by **March 13, 2015**.

Task 5 Final FHF Maps will be completed by Biota by **March 20, 2015**.

Task 6 Species-specific FHF maps will then be combined to generate a County-wide matrix grid of FHF values, from which Valuable Matrix Features will subsequently be identified. This effort will be completed by **April 1, 2015**.

Valuable Matrix Features

Valuable Matrix Features (VMFs) refer to the relative value of areas within a landscape "matrix" that surrounds and/or lies between Focal Habitat Features.

Task 7 Produce a GIS map of tiered areas of ecological importance that support the Focal Habitat Features. Tiered levels are based on the development of connectivity descriptors, and a final output grid will be reclassified to illustrate the combination of VMF based on ecological descriptors and proximity to nearest FHF cell. Approaches to developing connectivity descriptors that are based on ecological rather than structural relationships are available, that include patch, class and landscape scale associations. Assign levels of importance as follows:

- Habitat supports the function of a single or multiple species' ecology
- Habitats have important associations to the Focal Habitat Features
- Wildlife data, reports, or expert opinion demonstrate the importance of these habitats

Task 8 Provide a spreadsheet and text for each tier listing the following parameters that are intended to be conserved:

- The key ecological functions and features of each tier, including biotic and abiotic components or features that relate to the function of one or more focal habitat feature, citing the pertinent wildlife datasets
- The relationship between each tier, Focal Habitat Features and other tiers within the matrix

Tasks 7 and 8 will be completed by **April 17. 2015**.

Task 9 Final VMF parameters and thresholds will be confirmed in consultation with the NRTAB, in the form of a Draft VMF map. Task 9 will be completed by **May 1. 2015**.

Final Product

Task 10 Prepare and present work products listed above to the NRTAB and Teton County Planning and Development for review and improvement by **May 29, 2015**.

Task 11 Draft Report review by NRTAB completed and returned to Biota by **June 12, 2015**

Task 12 Final Report delivery by **June 30, 2015.**