

**Biological Advisory Team  
for the  
Hays County Regional Habitat Conservation Plan**

**NOTICE OF OPEN MEETING  
(Also available at [www.hayscountyhcp.com](http://www.hayscountyhcp.com))**

A meeting of the Biological Advisory Team (BAT) for the Hays County Regional Habitat Conservation Plan (RHCP) will be held as follows:

**Date & Time:**     **March 28, 2008; 9:00 a.m.**

**Location:**        **Texas Rivers Center, Room 226, 951 Aquarena Springs Drive, San Marcos, TX 78666 (map at <http://www.maps.txstate.edu/trc.html>)**

Members of the Hays County Commissioners Court may attend but no action will be taken.

Members of the Hays County RHCP Citizens Advisory Committee (CAC) may attend but no action will be taken.

The following subjects will be considered for discussion and/or action at said meeting:

1. Call to order.
2. Approve minutes from February 28, 2008 BAT meeting.
3. Citizens' comments.
4. Review project schedule and major milestones.
5. Review options for species coverage in the Hays County RHCP.
6. Review progress on habitat maps and proposed habitat determination process.
7. Review preserve design criteria.
8. Discuss and take appropriate action on agenda items for next meeting.
9. Adjourn.

BIOLOGICAL ADVISORY TEAM “BAT” MEETING  
Hays County Regional Habitat Conservation Plan

MINUTES

WHEN: February 28, 2008

WHERE: Texas Rivers Center, Room 107  
951 Aquarena Springs Drive, San Marcos, TX 78666

Attendance:

BAT Members

- Craig Farquhar – Chair
- Terri Siegenthaler
- Lee Elliott
- Linda Laack
- Randy Gibson

HCP Consultant Team

- Loomis Austin, Inc. (LAI): Clifton Ladd, Amanda Aurora, Jean Krejca (Zara Environmental)
- Smith/Robertson: Melinda Taylor and Rebecca Hays

BAT Members Not Present:

- Garry Stephens
- Cal Newnam

1. Call to order. BAT Chair Craig Farquhar called the meeting to order at 9:15 am.
2. Approve minutes from January 8, 2008 BAT meeting. BAT members reviewed and approved the minutes from the January 8, 2008 meeting with no changes.
3. Citizens’ comments. No citizen comments were made.
4. Review options for species coverage in the Hays County RHCP. BAT reviewed January 8, 2008 draft of the “Recommendations for Species Inclusion in the Hays County Habitat Conservation Plan.” Clif Ladd and Jean Krejca presented information on a possible range extension for the San Marcos salamander (*Eurycea nana*) to include portions of north-central Hays County. BAT discussed possible alternatives for how to address the species and other federally listed aquatic species in the plan, including “no take” scenarios and limited incidental take coverage. Several comments by BAT members suggested that all federally listed aquatic species should be treated similarly under the plan. The BAT voted to table the issue and continue discussion at the next meeting.
5. Review project schedule and major milestones. Clifton Ladd presented an updated schedule of major plan milestones and decision points. The BAT identified March 28 and June 3 as possible dates for future meetings.

6. Receive presentation regarding draft Hays County RHCP alternatives. Rebecca Hays presented a set of draft alternatives for the structure of the RHCP. The BAT discussed the basis for several of the “common elements” of each alternative (including land development and take projections, minimum preserve size criteria, and mitigation fees), the adequacy of preserve systems proposed for each alternative, and the preserve acquisition cost estimates. No action was taken.
7. Review progress on habitat maps and proposed habitat determination process. Clifton Ladd and Amanda Aurora presented a draft proposal including various options for determining the amount of habitat on a property during the plan participation process. The BAT discussed some of the pros and cons of map-based, on-site, and/or hybrid habitat determination approaches. No action was taken.
8. Review preserve design criteria. Clifton Ladd and Amanda Aurora presented a draft proposal with options for preserve design that incorporated concepts of core habitat, buffer zones, habitat quality, and preserve size. The BAT discussed issues of core habitat and the amount of mitigation credit generated by core and buffer habitat, issues related to the distribution of habitat in the county and the potential for much of the preserve system to include a large amount of on-habitat, and the distribution of preserve blocks across the county. No action was taken.
9. Discuss and take appropriate action on agenda items for next meeting. The BAT agreed that agenda topics for the next meeting would include discussion and possible action on how to address listed aquatic species under the plan. The BAT also agreed that the next meeting would include discussion and possible action on specific aspects of the habitat determination and preserve design processes. The BAT requested a list of priority issues related to habitat determinations and preserve design from the consultant teams to focus the discussion.
10. Adjourn. BAT Chair Craig Farquhar adjourned the meeting at 11:55 am.

## Hays County HCP Basic Schedule of Major Milestones and Decision Points

	November - December 2007	January 2008	February 2008	March 2008	April - May 2008	June 2008	July - August 2008	September 2008	October 2008	November 2008	December 2008	January 2009	February - March 2009	April - May 2009	June 2009
<b>Major Task or Milestone</b>	Initial Conservation Strategy: Presentations, Background, and Early Discussion	Species List for RHCP	RHCP Alternatives and Initial Conservation Program Design	Funding Strategy	Prepare 1st Complete Draft HCP	Review 1st Draft HCP and Hold Public NEPA Scoping Meeting	Prepare 2nd Draft HCP and Prepare EIS	Review 2nd Draft HCP and First Draft EIS	Prepare 3rd Draft HCP and Draft EIS	Review 3rd Draft HCP and Draft EIS	Prepare Final Draft HCP and Preliminary Draft EIS	Submit Complete Application Package and Hold Public Hearing (rcqd' by TPWD Code)	NEPA Public Hearing and Respond to Public Comments	Prepare Final HCP and EIS; Review and Comment on FWS Documentation	Receive Incidental Take Permit
<b>CAC Responsibilities or Actions</b>		Reviewed and Provisionally Accepted Recommended Draft Species List	Review and Discuss RHCP Alternatives	Identify Preferred RHCP Alternative and Provide Feedback on Preferred Funding Mechanisms		Review and Provide Comment on Draft HCP		Review and Provide Comment on Draft HCP and Draft EIS		Possible Meeting to Review and Provide Comment on Draft HCP and Draft EIS					
<b>BAT Responsibilities or Actions</b>		Recommended Draft Species List	Review and Discuss Mitigation Assessments and Preserve Design Criteria	Provide Feedback on Adequacy of Mitigation Assessments and Preserve Design Criteria		Review and Provide Comment on Draft HCP		Review and Provide Comment on Draft HCP and Draft EIS		Possible Meeting to Review and Provide Comment on Draft HCP and Draft EIS					
<b>Commissioner's Court Actions</b>			Work Session to Review Species List, Habitat Maps, Draft Alternatives, and Funding Options							Review and Comment on Draft HCP and Draft EIS		Approve All Documents for Submittal to USFWS (Final Draft HCP and Preliminary Draft EIS)		Review and Approve Final HCP and EIS	Begin Program Implementation

# HAYS COUNTY HABITAT CONSERVATION PLAN

## BIOLOGICAL ADVISORY TEAM

### RECOMMENDATIONS FOR SPECIES INCLUSION IN THE HAYS COUNTY HABITAT CONSERVATION PLAN

**DRAFT, MARCH 28, 2008**

Deleted: **JANUARY 8**

The Biological Advisory Team (BAT) of the Hays County Habitat Conservation Plan (Hays County HCP) was asked to propose a list of species to include in the plan and provide recommendations for the most appropriate type of coverage for included species. This proposal is the BAT's consensus recommendation for consideration by the Citizens Advisory Committee and the Hays County Commissioners Court.

With the assistance of the consultant team, the BAT assembled a comprehensive list of rare or sensitive species known to occur in Hays County based on the following sources:

1. All federal and state listed threatened or endangered species, or designated candidates for such listing;
2. All species tracked by the Texas Parks and Wildlife Department on the Annotated County List of Rare Species for Hays County (as of August 8, 2007) or the Texas Natural Diversity Database (as of October 2, 2006);
3. All species known to occur in Hays County that were included on recent federal listing petitions filed by the Forest Guardians or Karst Waters Institute; and
4. Other species identified by BAT members as rare or sensitive.

This initial comprehensive list of species of concern in Hays County included 112 species, including a number of plants, invertebrates, fish, amphibians, reptiles, and mammals. The BAT refined this comprehensive list of species of concern by selecting species that met the following preliminary criteria:

1. All federally listed species;
2. All state-listed amphibians and reptiles;
3. All species with a NatureServe<sup>1</sup> global rank of G1 through G2G3; and
4. All species endemic to Hays County.

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<sup>1</sup> NatureServe is a non-profit conservation organization whose stated mission is to provide the scientific basis for effective conservation action. NatureServe and its network of natural heritage programs are a leading source for information about rare and endangered species and threatened ecosystems. The NatureServe conservation status of a species or community is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment (G = Global, N = National, and S = Subnational). The numbers have the following meaning: 1 = critically imperiled; 2 = imperiled; 3 = vulnerable to extirpation or extinction; 4 = apparently secure; 5 = demonstrably widespread, abundant, and secure.

The BAT further reviewed the comprehensive and filtered lists of species of concern to arrive at the recommended list of species of concern to address in the Hays County HCP. Several species meeting the above criterion, after further review from the BAT, were removed from the list based on one or more of the following reasons:

- The species was not likely to occur within the anticipated coverage area of the plan (i.e., the portion of Hays County within the Edwards Plateau ecoregion, generally west of Interstate Highway 35);
- Recent research or known life history characteristics of the species suggest that it is likely to be more common than otherwise indicated by the NatureServe ranking; and/or
- The species would not be likely to benefit from the anticipated conservation actions to be implemented under the plan (i.e., the habitat types used by the species were not compatible with the habitat of the recommended covered species).

This recommended list of species of concern for the Hays County HCP includes ~~57~~ species, shown in Table 1.

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The BAT identified three levels of coverage for recommended species of concern to be addressed in the Hays County HCP:

1. Covered Species – Hays County should seek incidental take authorization for species in this category. The HCP must adequately describe the expected amount of take and impacts to the species and demonstrate that the benefits provided by mitigation measures in the conservation program satisfy the issuance criteria for an incidental take permit. This option may be appropriate for federally listed species that would experience take by activities covered by the HCP or species that may become listed in the foreseeable future and would likely experience take by covered activities;
2. Evaluation Species of Concern – Incidental take authorization for species of concern in this category may become necessary over the term of the Hays County HCP incidental take permit; however, including these species as “covered” is not justified at this time. Evaluation species of concern may be currently unlisted, but could become listed in the foreseeable future (many have already been petitioned for listing). Sufficient information on these species may also be lacking to support the level of analysis required to meet the issuance criteria for incidental take authorization. Hays County should include conservation measures to benefit evaluation species of concern, where practicable, and support research to help fill existing data gaps on the biology, habitat, distribution, or management of these species. The research supported

by the HCP may help preclude the need to list these species, or help facilitate obtaining incidental take coverage if these species become listed in the future.

3. Additional Species of Concern – Hays County should not seek incidental take authorization for species in this category because the species is not currently listed as threatened or endangered, the species is not likely to experience take from covered activities, or insufficient information is available to adequately evaluate take and mitigation. However, recognizing the rarity or sensitivity of these species, the HCP should include conservation measures to benefit additional species of concern, where practicable;

The BAT assigned each of the species of concern recommended for inclusion in the Hays County HCP to one of the three coverage categories. The BAT recommends that the current body of knowledge and expected regulatory needs justify including the golden-cheeked warbler and black-capped vireo as covered species under the plan. The County should seek incidental take coverage for these two species.

The BAT assigned the remaining ~~55~~ species of concern to a coverage category considering the likelihood of future listing, the current body of knowledge on the species, and potential overlaps with expected conservation measures for covered species.

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The BAT recommends that unlisted karst species (both terrestrial and aquatic) be considered as a group as “evaluation species of concern.” The specific list of karst species included in the plan under this category is less important if the plan focuses on the karst environment itself. Little is known about karst habitats in Hays County in general, but the possibility for future listing of one or more of these species is high. Supporting research on karst habitats and the distribution of rare karst species across the County would provide valuable information that would support conservation and planning efforts in the county. The BAT also recommends that the Cagle’s map turtle be included as an evaluation species of concern, since it has been petitioned for listing in the past. Needed research could include additional surveys to define its distribution in Hays County and the effectiveness of conservation/management practices. The proposed list of evaluation species of concern includes 40 species (39 terrestrial or aquatic karst species and the Cagle’s map turtle).

The BAT recommends that the species not classified as “covered” or “evaluation species of concern” be included in the Hays County HCP as “additional species of concern.” These species include several of the currently listed aquatic species, as well as unlisted plants and surface aquatic species. Conservation measures likely to be included in the plan, such as habitat protection for the golden-cheeked warbler and black-capped vireo, could provide secondary conservation benefits for these additional species by protecting similar habitats. The proposed list of additional species of concern includes ~~15~~ species (~~six~~ listed aquatic species, three unlisted plants, and ~~six~~ unlisted surface aquatic species).

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The complete list of recommended species of concern to include in the Hays County HCP and the recommended type of coverage for these species is shown in the attached table.

**Table 1. Recommended Species of Concern for the Hays County Habitat Conservation Plan and Recommended Coverage Categories.**

Common Name	Scientific Name	Taxa	Habitat
<b>COVERED SPECIES OF CONCERN</b>			
Golden-cheeked warbler**	<i>Dendroica chrysoparia</i>	Birds	Juniper-Oak Woodland
Black-capped vireo**	<i>Vireo atricapilla</i>	Birds	Deciduous Shrubland
<b>EVALUATION SPECIES OF CONCERN</b>			
Aquifer flatworm	<i>Sphalloplana mohri</i>	Turbellarians	Aquatic / Karst
a cave-obligate spider	<i>Cicurina ezelli</i>	Arachnids	Karst
a cave-obligate spider	<i>Cicurina russelli</i>	Arachnids	Karst
a cave-obligate spider	<i>Cicurina ubicki</i>	Arachnids	Karst
undescribed cave-obligate spider	<i>Eidmannella n. sp.</i>	Arachnids	Karst
undescribed cave-obligate spider	<i>Neoleptoneta n. sp. 1</i>	Arachnids	Karst
undescribed cave-obligate spider	<i>Neoleptoneta n. sp. 2</i>	Arachnids	Karst
undescribed cave-obligate spider	<i>Neoleptoneta n. sp. eyeless</i>	Arachnids	Karst
a pseudoscorpion	<i>Tartarocreagrís grubbsi</i>	Arachnids	Karst
a cave-obligate harvestman	<i>Texella diplospina</i>	Arachnids	Karst
a cave-obligate harvestman	<i>Texella grubbsi</i>	Arachnids	Karst
a cave-obligate harvestman	<i>Texella mulaiki</i>	Arachnids	Karst
a cave-obligate harvestman	<i>Texella renkesae</i>	Arachnids	Karst
a cave-obligate amphipod	<i>Allotexineckelia hirsute</i>	Crustaceans	Aquatic/Karst
a cave-obligate amphipod	<i>Artesia subterranean</i>	Crustaceans	Aquatic/Karst
a cave-obligate amphipod	<i>Holsingerius samacos</i>	Crustaceans	Aquatic/Karst
Texas troglobitic water slater	<i>Lirveolus smithii</i>	Crustaceans	Aquatic/Karst
a cave-obligate crustacean	<i>Tethysbaena texana</i>	Crustaceans	Aquatic/Karst
Balcones cave shrimp	<i>Palaemonetes antrorum</i>	Crustaceans	Aquatic/Karst
a cave-obligate decapod	<i>Calatbaemon holthuisi</i>	Crustaceans	Aquatic/Karst
a cave-obligate amphipod	<i>Seborgia relicta</i>	Crustaceans	Aquatic/Karst
Balcones cave amphipod	<i>Stygobromus balconies</i>	Crustaceans	Aquatic/Karst
Ezell's cave amphipod	<i>Stygobromus flagellates</i>	Crustaceans	Aquatic/Karst
a cave-obligate amphipod	<i>Texineckelia texensis</i>	Crustaceans	Aquatic/Karst
a cave-obligate amphipod	<i>Texineckeliopsis insolita</i>	Crustaceans	Aquatic/Karst
a cave-obligate springtail	<i>Arrhopalites texensis</i>	Hexapods	Karst
An ant-like litter beetle	<i>Batrissodes grubbsi</i>	Insects	Karst
Comal Springs diving beetle	<i>Comaldessus stygicus</i>	Insects	Aquatic/Karst
Edwards Aquifer diving beetle	<i>Haideoporus texanus</i>	Insects	Aquatic/Karst
a cave-obligate beetle	<i>Rhadine austinica</i>	Insects	Karst
a cave-obligate beetle	<i>Rhadine insolita</i>	Insects	Karst
undescribed beetle	<i>Rhadine n. sp. 2 (subterranea group)</i>	Insects	Karst
undescribed beetle	<i>Rhadine n. sp. (subterranea group Boyett's)</i>	Insects	Karst
Flattened cavesnail	<i>Phreatodrobia micra</i>	Mollusks	Aquatic/Karst



Common Name	Scientific Name	Taxa	Habitat
Disc cavesnail	<i>Phreatodrobia plana</i>	Mollusks	Aquatic/Karst
High-hat cavesnail	<i>Phreatodrobia punctata</i>	Mollusks	Aquatic/Karst
Beaked cavesnail	<i>Phreatodrobia rotunda</i>	Mollusks	Aquatic/Karst
Blanco River springs salamander	<i>Eurycea pterophila</i>	Amphibians	Aquatic/Karst
Blanco blind salamander	<i>Eurycea robusta</i>	Amphibians	Aquatic/Karst
Cagle's map turtle	<i>Graptemys caglei</i>	Reptiles	Aquatic

**ADDITIONAL SPECIES OF CONCERN**

Hill Country wild-mercury	<i>Argythamnia aphanoides</i>	Plants	Terrestrial
Warnock's coral-root	<i>Hexaletris warnockii</i>	Plants	Terrestrial
Canyon mock-orange	<i>Philadelphus ernestii</i>	Plants	Terrestrial
Texas wild-rice**	<i>Zizania texana</i>	Plants	Aquatic
Texas austrotinodes caddisfly	<i>Austrotinodes texensis</i>	Insects	Aquatic
Comal Springs riffle beetle**	<i>Heterelmis comalensis</i>	Insects	Aquatic
a mayfly	<i>Procloeon distinctum</i>	Insects	Aquatic
San Marcos saddle-case caddisfly	<i>Protophila arca</i>	Insects	Aquatic
Comal Springs dryopid beetle**	<i>Stygoparnus comalensis</i>	Insects	Aquatic
Texas fatmucket	<i>Lampsilis bracteata</i>	Mollusks	Aquatic
Golden orb	<i>Quadrula aurea</i>	Mollusks	Aquatic
Texas pimpleback	<i>Quadrula petrina</i>	Mollusks	Aquatic
Fountain darter**	<i>Etheostoma fonticola</i>	Fishes	Aquatic
San Marcos salamander*	<i>Eurycea nana</i>	Amphibians	Aquatic/Karst
Texas blind salamander**	<i>Eurycea rathbuni</i>	Amphibians	Aquatic/Karst

\* Federally threatened species

\*\* Federally endangered species

# Hays County Generalized Cave, Spring, and Well Locations With Karst Terranes

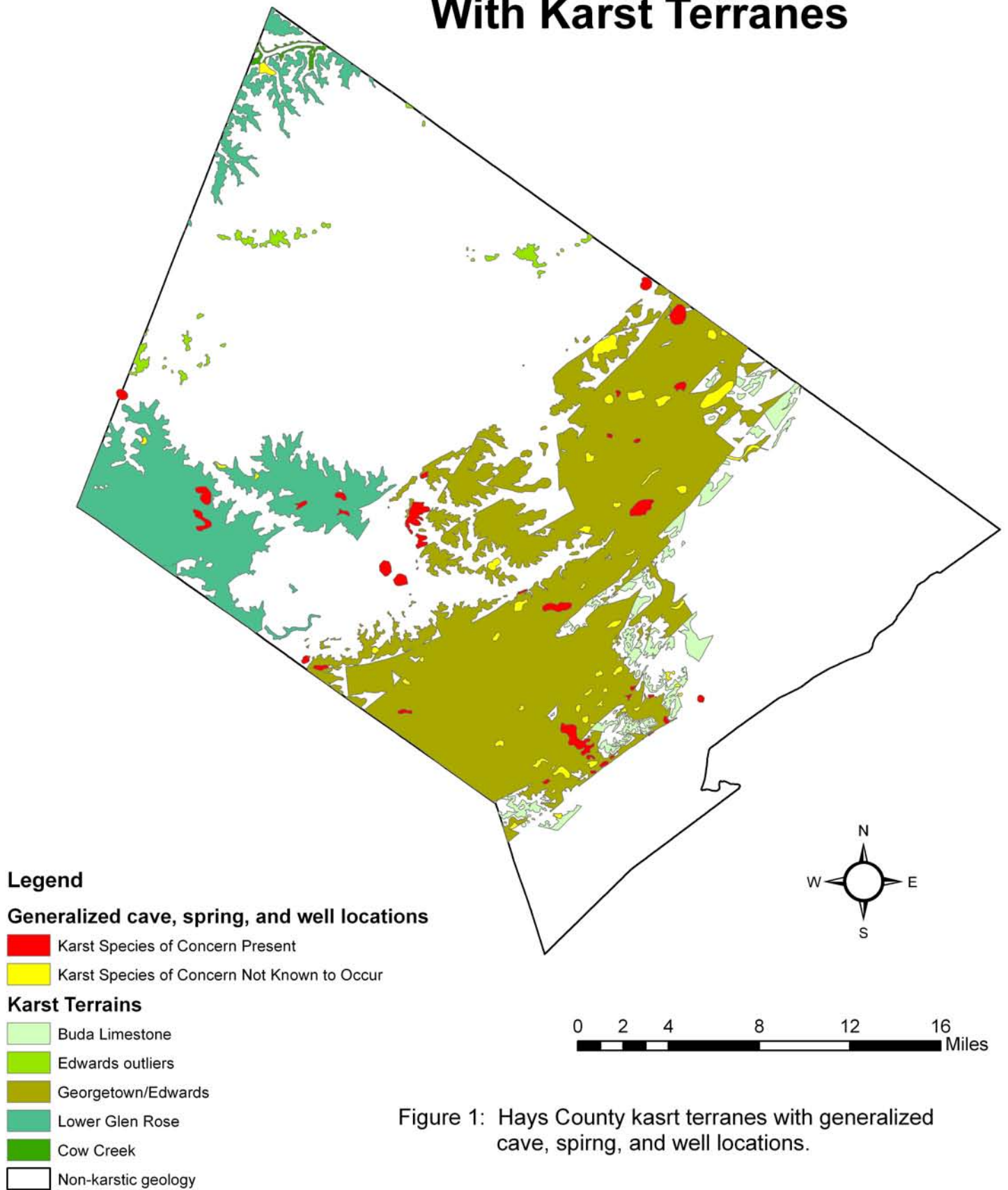


Figure 1: Hays County karst terranes with generalized cave, spring, and well locations.

# Hays County Generalized Cave, Spring, and Well Locations With Edwards Aquifer Recharge Zones

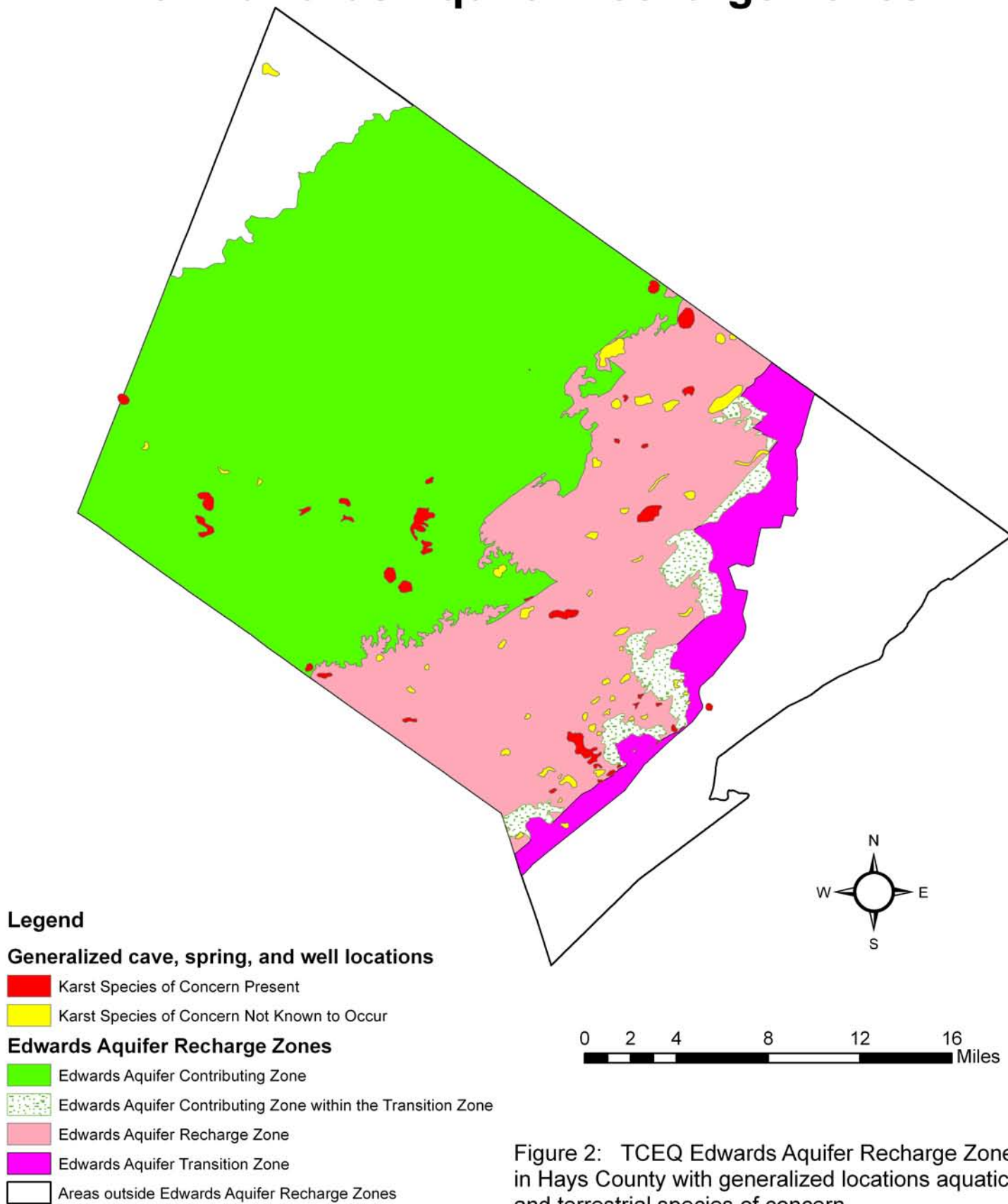


Figure 2: TCEQ Edwards Aquifer Recharge Zones in Hays County with generalized locations aquatic and terrestrial species of concern.

# LOOMIS AUSTIN

ENGINEERING, LAND SURVEYING &  
ENVIRONMENTAL CONSULTING

## MEMORANDUM

To: Hays County HCP Biological Advisory Team  
From: Clifton Ladd (Loomis Austin, Inc.)  
Date: March 21, 2008  
Subj: Water Quality measures for protection of *Eurycea* salamanders, other listed aquatics

As we discussed at the BAT meeting on February 28, new information has come to light on a possible range extension of the San Marcos salamander (*Eurycea nana*), including part of north-central Hays County. At the last meeting, we discussed possible alternatives for how to address this species and other federally-listed aquatic species in the plan, including “no take” guidelines. Several comments by BAT members suggested that all federally-listed aquatic species should be treated similarly under the plan. The BAT voted to table the issue and continue discussion at the next meeting.

The Texas Commission on Environmental Quality (TCEQ) published the most recent optional water quality measures in September 2007. They are on the web at [http://www.tceq.state.tx.us/comm\\_exec/forms\\_pubs/pubs/rg/rg-348/rg-348a.html](http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/rg/rg-348/rg-348a.html). This document is Appendix A to the TCEQ “Edwards Aquifer Technical Guidance Manual” (RG-348). The guidelines include provisions for the following:

2. Site Planning
  - 2.1. Sensitive Features
  - 2.2. Sensitive Features Identified During Construction
  - 2.3. Caves
    - 2.3.1. Gate Construction
  - 2.4. Stream Buffers
3. Construction
4. Permanent BMP Implementation
  - 4.1. Hazardous Material Traps (HMT)
  - 4.2. Total Suspended Solids (TSS) Removal
    - 4.2.1. Step 1: Required TSS Removal
    - 4.2.2. Step 2: Select an Appropriate BMP
    - 4.2.3. Step 3: Calculate TSS Load Removed by BMPs
    - 4.2.4. Step 4: Calculate Fraction of Annual Runoff to Be Treated
    - 4.2.5. Step 5: Calculate Capture Volume
5. Measures to Protect Stream Morphology
6. Maintenance Requirements

The optional water quality measures are designed to protect water quality for the Barton Springs salamander (*Eurycea sosorum*), fountain darter (*Etheostoma fonticola*), Georgetown

salamander (*Eurycea naufragia*), San Marcos salamander (*Eurycean nana*), and San Marcos gambusia (*Gambusia georgei*). As stated in the Introduction:

“If these practices contained in this document are used, they are expected to result in "no take" of these species from degradation of water quality by non-Federal landowners and other non-Federal managers. This "no take" concurrence does not cover projects that: (1) occur outside the area regulated under the Edwards Aquifer Rules; (2) result in water quality impacts that may affect Federally-listed species not specifically named above; (3) result in impacts to Federally-listed species that are not water quality related; or (4) occur within one mile of spring openings that provide habitat for federally-listed species.”

At this time, we suggest adopting this guidance from the TCEQ as “no-take” guidelines for aquatic species in Hays County, including the *Eurycea* salamanders in north-central Hays County. We are considering additional provisions, possibly including extending the applicability of the guidelines to less than one mile from known localities, if other provisions are also met, such as for project areas that lie downgradient of springs or if higher removal efficiency of TSS can be attained than what is currently in the guidelines.

I look forward to seeing you at our meeting on March 28, at which time we can discuss this issue further.

Highlighted concepts important for BAT consideration.

## PROPOSED PROCESS FOR IMPLEMENTATION OF THE CONSERVATION PROGRAM

### 1.0 Habitat Determinations

- Habitat determinations will be prepared to identify the number of acres of potential GCW and BCV habitat present on a parcel. The habitat determination will be the basis for a mitigation assessment for participation in the RHCP.
- Habitat determinations will be performed by County biologists (either on staff or under contract). Biologists conducting habitat assessments for the RHCP must hold or be covered by an USFWS Threatened and Endangered Species permit that authorizes permittees to conduct surveys for the golden-cheeked warbler and black-capped vireo.
- Two options for habitat determinations will be available to plan participants: a “standard” map-based habitat determination using the GCW and BCV habitat maps or an “alternative” on-site habitat determination identifying habitat according to TPWD criteria published in Campbell 2003.
- Habitat determinations will be prepared for legal parcels (not portions of parcels).

#### 1.1 *Standard Map-based Habitat Determination*

- Use GCW and BCV habitat maps to determine the amount of potential habitat on a parcel, based on legal parcel boundaries.
- Habitat determination will include a map showing the location and extent of potential habitat on a parcel, and will include an accounting of the acreage of habitat on the parcel.
- No field verification as part of the participation process. Demonstration of occupancy of potential habitat is not required.

#### 1.2 *Alternative On-site Habitat Determination*

- Alternative on-site habitat determinations will involve a review of various published materials and maps pertaining to the parcel, as available and applicable (i.e., aerial images, habitat models, prior observation data, soils and geology, topography, etc.), and include a site visit to verify habitat conditions.
- Identification of GCW habitat will be made based on the habitat criteria described by TPWD (Campbell 2003):

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**IMPORTANT NOTE:** This document summarizes some of the major components of and alternatives for a possible regional habitat conservation plan (RHCP) for Hays County, Texas. No preferred conservation strategy for the Hays County RHCP, including details regarding the mitigation needs, participation process, or other specifics, have been determined at this time. *All aspects of this document and other alternatives are draft and are subject to change.*



- Stands of woodland vegetation with canopy cover of 35% to 100% that include some mature juniper and more than 10% of the canopy composed of oaks or other deciduous hardwoods;
- Non-habitat includes juniper dominated stands with less than 10% hardwoods and open woodlands/savannas with less than 35% total canopy cover.
- Identification of BCV habitat will be made based on the habitat criteria described by TPWD (Campbell 2003):
  - Patches of deciduous shrubs with 30 to 60% canopy cover and a shrub canopy height of up to 6 ft tall;
  - Shrub patches located in a matrix of grassland, shrubland, and open woodland/savanna habitats.
- Demonstration of occupancy of potential habitat is not required.
- Absence of occupancy from a patch of potential habitat may be established with three consecutive years of presence/absence survey results from within the five years prior to application for participation in the RHCP. All presence/absence surveys and survey reports must be conducted in accordance with USFWS survey guidelines. Three years of demonstrated absence from a potential habitat patch is necessary to exclude potential habitat from a habitat determination. Survey data used to demonstrate absence must be provided to the County by the applicant.
- Habitat determination will include a map showing the location and extent of potential habitat on a parcel, and will include an accounting of the acreage of habitat on the parcel.

## 2.0 Mitigation Assessments

- Mitigation assessments will assume that all habitat within the boundary of a legal parcel being enrolled in the RHCP will be taken (with certain exceptions described below).
- If a portion of a property (could be a single parcel or multiple parcels comprising a project area) contains sufficient habitat to meet the minimum preserve block criteria (or contributes core habitat to an adjacent preserve parcel) and the plan participant commits to avoid this habitat during the development process, the participant may generate on-site mitigation credit by placing the habitat patch under a conservation easement or otherwise conveying it to the County as preserve land. Acceptance of on-site mitigation in lieu of fees will be at the discretion of the County.

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**IMPORTANT NOTE:** This document summarizes some of the major components of and alternatives for a possible regional habitat conservation plan (RHCP) for Hays County, Texas. No preferred conservation strategy for the Hays County RHCP, including details regarding the mitigation needs, participation process, or other specifics, have been determined at this time. *All aspects of this document and other alternatives are draft and are subject to change.*

- Each acre of take will require one mitigation credit to participate in the RHCP.
- Mitigation assessments for GCWs under either the standard or alternative habitat determination approaches will be at a 1:1 mitigation ratio (1 acre of habitat = 1 acre of take).
- Mitigation assessments for BCVs under the map-based habitat determination approach will be 1 acre of mapped BCV habitat = .07 acre of take (15:1 mitigation ratio)
  - Determine potential habitat from revised habitat model.
    - Possible approach → revise habitat map based on landscape analysis for forest canopy cover using the 0-30 or 30-60 percent range with a 13 cell window (approx. 38 acres or a small BCV cluster); model results in approx. 150,000 acres of potential habitat with decent agreement with aeriels; Maresh derived estimate of 23,855 ac is approx. 15% of 150,000 acres; so assess mitigation ratio at 15:1
- Mitigation assessments for BCVs based on the alternative on-site habitat determination using TPWD habitat descriptions will be at a 1:1 mitigation ratio (1 acre of on-site habitat = 1 acre of take).
- Habitat quality is too subjective to determine from brief on-site visits and there has been no formal verification of the GCW or BCV habitat models, so no quality adjustments for take will be made.
- Pricing structure of mitigation credits can be used to encourage adequate participation in the program.

### 3.0 Participation Process

- Potential participant seeking incidental take authorization for GCW or BCV habitat through RHCP submits a completed application to County RHCP program.
- Application includes:
  - Applicant and property owner contact information
  - Property information, including legal description demonstrating that the parcel is a legal tract
  - Detailed property boundary and location information, including maps and/or GIS data

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- Authorization to enter the property for an on-site habitat assessment, and information needed to coordinate access to the property (if applicable)
- Other information about the property, such as prior habitat assessments or survey information
- Type of habitat determination requested (standard map-based determination or alternative on-site assessment)
- Fees for processing requests for alternative on-site habitat determinations; no processing fee will be assessed for a standard map-based determination
  - Fee required for an alternative on-site determination will approximate the cost for consulting services to prepare the assessment (approx. \$2,000)
- County RHCP staff or contracted consultants will review application and determine if the application is complete, if the property is eligible to participate in the RHCP (i.e., is the property a legal parcel?).
- If the parcel is eligible to participate, County RHCP staff/consultants will conduct a habitat determination (either using the standard map-based approach or the alternative on-site approach, as requested by the applicant) that will identify the number of acres of GCW and BCV habitat occurring on the property.
- The County will also prepare a mitigation assessment for the property that identifies the number of mitigation credits needed to obtain take authorization for the parcel through the RHCP. The mitigation assessment will also identify any opportunities for on-site mitigation credit generation.
- The mitigation assessment will include a statement identifying the number of mitigation credits currently available from the County and the price per credit needed to purchase the mitigation.
- Price of a mitigation credit approximates per acre cost of potential preserve land in Hays County (adjusted to encourage participation, etc.).
- Payment of mitigation fees, acceptance of on-site mitigation credits, or acceptance of other preserve land in lieu of fees will secure take authorization through the RHCP. Upon completion of the transaction, the County will update mitigation credit/debit accounts to ensure that authorized take does not exceed available mitigation.

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## 4.0 Core Habitat Determinations

- **County generates mitigation credits by protecting and managing acres of “core” habitat.**
  - Core habitat within a preserve parcel is interior to a buffer zone along the edge of a non-preserve parcel boundary and any other interior edges not used and managed for the primary benefit GCWs or BCVs.
  - Buffer Zone: **300 ft** (buffer width mentioned in Campbell 2003)
  - Potential habitat within a buffer zone does not generate full mitigation credit unless the adjacent property becomes part of the preserve system or the internal non-GCW/BCV use is eliminated.
    - Amount of buffer zone (300 ft) on parcels 250 acres and larger ranges from approximately 36% to 16% of the area of the tract, decreasing with increasing parcel/block size
- The number of acres and location of potential GCW and BCV habitat existing on a parcel at the time of acquisition will be determined by a County-prepared habitat determination. The County will also calculate the number of core GCW and BCV habitat acres present on the parcel.
- Additional core habitat is created when assembling adjacent parcels into larger preserve blocks (buffers between adjacent preserve parcels are eliminated, which allows any habitat within the former buffers to be considered core habitat), creating an incentive to form larger preserve blocks.
- Additional habitat may be created within an existing preserve parcel over the duration of the permit as the result of management activities on the preserve (particularly for BCV habitat, but may also apply to GCW habitat). New areas of GCW or BCV habitat that develop within an existing preserve must meet the habitat criteria described by TPWD (Campbell 2003) and be documented with a new habitat determination. The County may obtain additional mitigation credit for new acres of core habitat created in an existing preserve since the preserve was acquired.
  - Strategy will help compensate for additional acreage needed for preserves due to buffer zones and encourage quality management of habitat on the preserve system.
  - Will require good mapping and record keeping to be able to compare original and updated habitat determinations.

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- Review cycle every 5 or 10 years? Perhaps coincide with a management plan review/monitoring program cycle? Feature as an adaptive management element.
- Biological basis for core habitat system:
  - Maximizing core credits in the preserve system promotes the formation of large preserve blocks with a compact preserve configuration
  - Core habitat is protected by a buffer from adjacent uses, which will help ensure the permanent protection of the core habitat (balances the permanent loss of habitat associated with development)
  - Core habitat concept combined with minimum preserve block size criteria help compensate for lack of pre-determined design capability in a conservation banking option.

## 5.0 Mitigation Credit Generation

- Protection and management of core habitat creates mitigation credits that the County can use to offset take from County projects or sell as mitigation to other RHCP participants.
- The mitigation value of both fee simple preserves and conservation easements will be determined by the number of acres of habitat within the preserves.
  - One acre of core GCW or BCV habitat on a preserve parcel generates 1 “base” mitigation credit
  - One acre of buffer habitat (GCW or BCV) will generate 0.5 “base” mitigation credit
- To help achieve recovery goals (i.e., build a larger preserve than may be needed to mitigate for take permitted through the program), the County may receive proportionately more mitigation credit per acre of core habitat protected and managed when the entire preserve system meets certain size thresholds (i.e., a “recovery credit bonus”):
  - Background:
    - For full size, pre-determined preserve alternative: 32,000 acres of core habitat protected would allow approx. 80,000 acres of take (presuming that a 32,000 acre preserve is sufficient to satisfy the county’s portion of the recovery goals for each species, the rest of the habitat could be taken; over 30 years approx. 80,000 acres of take is projected); mitigation

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ratio is 1 acre of take = 0.4 acre of mitigation or 1 acre of mitigation = 2.5 acres of take

- Proposed breakdown for the 16,000 acre preserve alternative results in 24,250 mitigation credits (see ratios below); proposal would cover approx. 30% of total expected take (80,000 acres) over 30 years
- Proposed breakdown for a banked 32,000 acre preserve results in 61,250 mitigation credits; proposal would cover approx. 77% of total expected take (80,000 acres) over 30 years. To compensate for the designed preserve/rolling bank difference, the acreage needed to get to 80,000 mitigation credits (assuming that the last threshold will get you a 1:3 mitigation ratio) is 38,250 acres.

– Recovery Credit Bonus Thresholds:

- 0 acres to 3,500 acres of core habitat protected → 1 acre of core habitat : 1 mitigation credit
  - 3,500 acres to 12,000 acres of core habitat protected → 1 acre of core habitat : 1.5 mitigation credits
  - 12,000 acres to 22,000 acres of core habitat protected → 1 acre of core habitat : 2.0 mitigation credits
  - 22,000 acres to 32,000 acres of core habitat protected → 1 acre of core habitat : 2.5 mitigation credits
  - 32,000 acres to 38,250 acres of core habitat protected → 1 acre of core habitat : 3.0 mitigation credits
  - +38,250 acres of core habitat protected → 1 acre of core habitat : 1 mitigation credit available for sale outside of Plan Area
- Additional credit created when adjacent parcels are added to preserve blocks (buffer becomes core) or when subsequent habitat reviews identify new habitat on existing RHCP preserves (compared to original habitat determination)

## 6.0 Overall Take-to-Mitigation Relationship

- Mitigation Debits (Take)
  - Habitat Acres Taken = # Mitigation Credits Needed
- Mitigation Credits Generated

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- Habitat Acres Preserved x Core/Buffer Factor (1.0 or 0.5) x Recovery Credit Bonus (1.0 – 3.0) = # Mitigation Credits Generated
- Reevaluate credits generated per parcel upon acquisition of adjacent parcels (recalculate core/buffer factor) or during periodic habitat evaluations (compare updated habitat determination with original determination; bank credits for new habitat generation)
- Participation fees (price per credit) adjusted to encourage participation and help fund plan

## 7.0 Preserve Design Criteria

- Terminology
  - Preserve Parcel: individual legal parcels or tracts comprising the preserve system (fee simple or easement)
  - Preserve Block: clusters of adjacent preserve parcels forming a contiguous preserve area (fee simple or easement)
  - Preserve System: entire collection of preserve blocks across the plan area; total preserve size (fee simple or easement)
  - Watershed Units: geographic segments of the plan area used to ensure distribution of preserve blocks across the county; allows for different target acreages/acquisition schedules in different parts of the county
- **Minimum Preserve Block Criteria:**
  - A preserve block sufficient to generate mitigation credits for GCWs must include at least 250 core GCW habitat acres;
  - A preserve parcel sufficient to generate mitigation credits for BCVs must include at least 40 core BCV habitat acres.
- Preserve Block Distribution: set target acreages for each of the Watershed Units to help meet recovery strategy of protecting interconnecting habitat and enable priority scheduling in the acquisition process.
- Concepts of buffers, edge to area ratios, large size, compact configuration, habitat quality are all implicit in the core habitat concept and mitigation credit generation formulas; no need for further definition

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- All preserve land able to generate credits must be protected and managed for the primary benefit of the covered species and species of concern; detailed management plans will be required.

## 8.0 Role of Existing Protected Open Space

- Preserve parcels acquired adjacent to existing protected open space would not trigger the creation of a buffer along the shared boundary (preserve parcel could generate more core habitat).
- Existing protected open space is not typically allowed to provide mitigation to offset future take (it is part of the overall baseline); however, management of habitat on existing preserves could allow acreage to contribute to meeting recovery goals.
- If management agreements can be secured with owners of existing protected open spaces, then allow protected habitat to be counted towards the total size of the preserve system. Would not generate any mitigation credits directly, but would contribute progress towards meeting the acreage thresholds for the Recovery Credit Bonus and allow credit generation on other preserves at a higher ratio.

## 9.0 Potential Preserve Acquisition Review

- Develop process for quickly evaluating potential preserve parcels prior to acquisition to guide decision making process (what open space goals does a particular acquisition target contribute to, and by how much)
- Process described in RHCP would be focused on generating the info needed to evaluate progress towards RHCP goals and objectives (generally “endangered species goals”) as part of a larger open space program (fits with a possible county-wide, multi-use TIF financing model); while parallel processes from other groups like CPAT, etc...would address recreation needs, vista/rural character preservation, historic/cultural resource preservation, etc...
- Primary RHCP preserve consideration is generation of mitigation credits.
  - County will perform a habitat assessment using a hybrid approach of map-based and on-site verification (i.e., basically use the map, but include a site visit to identify any gross errors in habitat models)
  - Generate an assessment of GCW and BCV mitigation credits able to be generated by potential acquisition target (including core/buffer breakdown,

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considerations for known on-site uses not compatible with GCW/BCV habitat that could affect credit generation, etc...)

- Describe how acquisition contributes towards credit bonuses (i.e., recovery credit bonus thresholds, preserve block size increases – reducing buffer area, etc...) or contributes to preserve distribution goals, target acreage goals (overall and by watershed unit), etc.
- Complete a desktop review of other sensitive resources, including:
  - location over Edwards Aquifer
  - location over karst terranes
  - presence of known caves (number of features, size, importance)
  - presence of known rare karst species (identify species)
  - presence of known major spring outlets (number)
  - length of river/major creek frontage (especially Blanco River);
- Describe how potential acquisition would contribute to other conservation goals and objectives for species of concern (i.e., describe the importance of parcel for other species of concern)

## 10.0 Public Access Considerations

- Highlight the trade off between intensive public access and use with mitigation potential of preserve parcels, develop a process to deal with these trade offs; but emphasize opportunities for mixed use of preserve parcels
- Identify types of public use compatible with endangered species habitat – low intensity, pedestrian, seasonal access, and the necessary management and monitoring to ensure that uses don't negatively affect the covered species (i.e., "no take" public access guidelines)
- Public access may decrease mitigation value of protected habitat if "no take" guidelines can't be met; introduce possibility of needing to use mitigation credits to offset impacts, etc.
- Identify portions of preserve parcels where more intensive public use could occur; apply buffer to habitat areas (300 ft) to ensure avoidance of habitat areas so that debits from mitigation bank are not needed

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## 11.0 Preserve Acquisition Mechanisms

- Multiple acquisition mechanisms to enhance partnering opportunities with other jurisdictions, organization, and private landowners
- Fee Simple Acquisition:
  - County owned and managed lands; appropriate for possible public access; most control over operation and management
  - Preserves owned and managed by “managing partners” such as other municipalities, land trusts, conservation organizations, etc. County would secure an interlocal or implementing agreement with managing partners to protect and manage habitat areas for benefit of endangered species (could generate mitigation credits for use by managing partner or conveyed to County and added to bank)
- Perpetual Conservation Easements:
  - Permanent easements on private property (partnerships with private landowners)
  - Need to determine standards to easement terms related to habitat protection and management suitable to generate mitigation credit
  - More flexible terms could mean less mitigation credit generated by the easement
- Term Conservation Easements:
  - Flexible, temporary conservation easement suitable for BCV habitat management on private property
  - Option to enhance participation by private landowners to engage in voluntary habitat management
  - May be combined with a Safe Harbor program built into the HCP
  - May not generate full mitigation credit, since easement is temporary
  - May limit overall contribution of temporary easements to total BCV preserve acres to limit exposure to “double taking” (i.e., generate credits with a temporary easement that are sold to a third party; habitat in temporary easement then comes out of program and is not replaces; credits sold are no longer supported by mitigation on the ground)

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- Could develop an adaptive management process for dealing with uncertainty regarding temporary easements

## 12.0 Biological Goals and Objectives for RHCP

- Goal: Create a preserve system within Plan Area that adequately mitigates for the impacts of authorized take and contributes to recovery goals for the GCW and BCV.
  - USFWS Recovery Goals:
    - GCW Recovery Plan Task 2.1 (Establish a system of focal areas and interconnecting habitat, where necessary, within the 8 recovery regions in the breeding range). Hays County straddles two GCW recovery regions and only includes scattered, relatively small, patches of GCW habitat (unlike large blocks of high quality habitat seen in Travis and (to a lesser extent) Comal counties).
    - BCV recovery plan out of date. HCP goals to protect some percentage of the available habitat.
  - Level of take authorized by RHCP: ????
  - Objective: Total area of core GCW and BCV habitat protected = ????
  - Objective: Set take – mitigation credit – core habitat ratios to adequately compensate for impacts from authorized take.
- Goal: Create a preserve system that functions as interconnecting habitat between large habitat blocks elsewhere in the region.
  - Hays County doesn't really have an obvious "focal area" for protection for either species that would be important in a recovery context.
  - Objective: Preserve configuration - divide Plan Area into conservation units or macrosites (roughly approximating major watershed boundaries) and set core habitat acreage targets for each conservation unit to create a preserve system that is well distributed across the county.
- Goal: Ensure that preserve land has lasting value to species.
  - Objective: Specify minimum preserve criteria
  - Objective: Specify process and criteria for management plans and monitoring program

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- Objective: Include adaptive management processes for modifying conservation program, management plans, etc. to address potential issues
- Goal: Contribute to the conservation of other important County resources within preserve system, including karst habitat, aquatic/riparian habitat, and the quality of ground water and surface water resources.
  - Objective: Include evaluation of aquifer, karst, aquatic features in review of potential preserve acquisitions (implement under preserve acquisition review process)
  - Objective: Include detailed surveys for evaluation and additional species of concern and habitats post preserve parcel acquisition to create inventory of conserved resources (implement under preserve management planning)
  - Objective: Include management practices for evaluation and additional species of concern on preserve parcels, where compatible with management of habitat for covered species (implement under preserve management planning)
  - Objective: Identify research priorities for evaluation species of concern and implement research projects to fill knowledge gaps that could assist with the creation/implementation of more focused conservation measures for evaluation species to prevent listing or obtain take coverage if listed. (implement under other conservation measures)
- Goal (Community Goal): Encourage partnerships with private landowners and other organizations as conservation partners.
  - Objective: Use variety of preserve acquisition mechanisms to provide options for partnering with private landowners, other jurisdictions, and conservation organizations

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