

## Guidance - Retardant Avoidance Maps For Garmin Aviation GPS Users In USFS Region 3

Carl Beyerhelm – Resource Information Specialist – Coconino National Forest – Rev 9 May 2013

**Background** - Pilots and air attack personnel may find it difficult to identify retardant avoidance areas for reasons that include those listed below.

- They may not be familiar with local features and terrain.
- They may deliver retardant to many incidents during an operational period.
- Handling, referring to, and interpreting paper retardant avoidance maps can divert attention from critical flight and mission elements.
- Operations at flight speed and at low altitude can make timely anticipation and recognition of ground features difficult, especially during smoky conditions.

Retardant avoidance maps are available in georeferenced PDF format for use on smartphones and tablets. This guidance describes similar opportunities for Garmin aviation GPS users. An example from a Garmin Aera 796 is illustrated at right.

Although designed for aviation use, this map product should also be compatible with many other ground-based Garmin GPS receiver models.

**Data Source** – The Garmin retardant avoidance map described here was sourced from the **S\_R03.Hydro\_Avoidance\_2013** and the **S\_R03.Species\_Avoidance\_2013** feature classes of the **IDB-G\_R03.DEFAULT\S\_R03.Fire\_Retardant\_Avoidance** feature dataset produced and maintained by USDA – Forest Service, Region 3.

**Data Processing** - Polygons were simplified using a 10-meter tolerance to facilitate creation of a Region-wide map of manageable file size (~5 MB) that would be nimble enough for use on handheld devices. Also, features smaller than half an acre in size were merged with neighboring polygons.

**Map Coverage** – This map covers National Forests and National Grasslands within Region 3 of the U.S. Forest Service, which includes Arizona, New Mexico, and parts of Texas and Oklahoma.



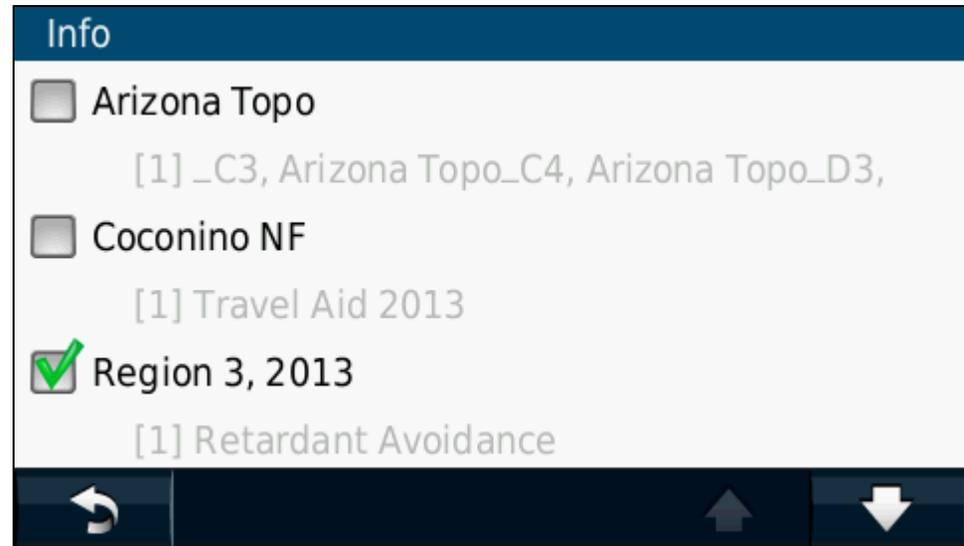
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**Setup** – Connect the Garmin aviation device to a PC using the device’s USB cable, and then copy and paste the **RetardantAvoidance\_R3\_2013\_RevA.img** file into the device’s **Map** folder, or its equivalent.

The file looks like a zip file in Windows Explorer, but do not try to unzip it. The map should now appear in the device’s map list, and be ready for use. A Nüvi map list is illustrated here.

**Use** – The map itself is a single layer having these three color-coded feature sets.

- **Blue** – Hydro avoidance only
- **Red** – Hydro and species avoidance
- **Green** – Species avoidance only



On some models, and at some scales, labels may appear that describe the avoidance feature. In the example below left, the blue feature is labeled “Hydro” and the red feature is labeled “Hydro + E” (hydro plus endangered species). “T” and/or “S” may also appear in labels, indicating a threatened or sensitive species component.

**Take Note** - This is an **untested, prototype map product**. Users should thoroughly familiarize themselves with its use, and assess its relevance, prior to operational use on a real incident.

**Comments** – Report annoyances and comments to [cbeyerhelm@fs.fed.us](mailto:cbeyerhelm@fs.fed.us).

