

# SOLSTICE: An Electronic Journal of Geography and Mathematics

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Deep Blue



IMaGe Home



Solstice Home



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Final version of IMaGe logo created by Allen K. Philbrick from original artwork from the Founder.

## VOLUME XXIII, NUMBER 2; December, 2012

### Part 2. Geosocial Networking: A Case from Ann Arbor, Michigan

David E. Arlinghaus and Sandra L. Arlinghaus  
Associated .kmz download.



lands adjacent to a creek, environmentally-sensitive residents quite naturally became concerned for the trees and wildlife that will be destroyed or disturbed. The project is still on-going and the geosocial network described below remains in place.

The County coded its easement with pink flags. It tagged selected large trees or otherwise interesting vegetation with a blue band if they were to be removed; it tagged trees within the easement with a red band if they were to be left alone. All vegetation within the easement, except trees or shrubs carrying red tags, were to be removed. Color was critical—a simple red/blue confusion could cost a tree its life!

One neighborhood used Google Earth, together with a GPS-enabled smartphone, to make an inventory of trees present, along a half-mile stretch of the creek, before the project began. David E. Arlinghaus did all the photography with a smartphone that geotagged the images. He then transmitted the images to Sandra L. Arlinghaus who did the mapping using a combination of GeoSetter and Google Earth (Figure 1).

Follow up in July of 2012, following the removal of trees and stream bank stabilization enabled the neighborhood to continue to track the progress of the project. Figures 2 through 8 show a sequence of screen captures from the field photographs. Figures 2 through 6 show the successes and failures (related to a drought) of larger, staked plantings. Figures 7 and 8 shows two of the many stream bank photos designed to illustrate the broader vegetation restoration.

Captions reveal some of what can be noted; however, to get a full view, download the linked .kmz file at the top of this article and open it in Google Earth. In that way, the reader of this article can follow along with what is happening in this territory without having to walk through the somewhat difficult terrain! Follow where the county is spending tax payer dollars on an important environmental restoration project!

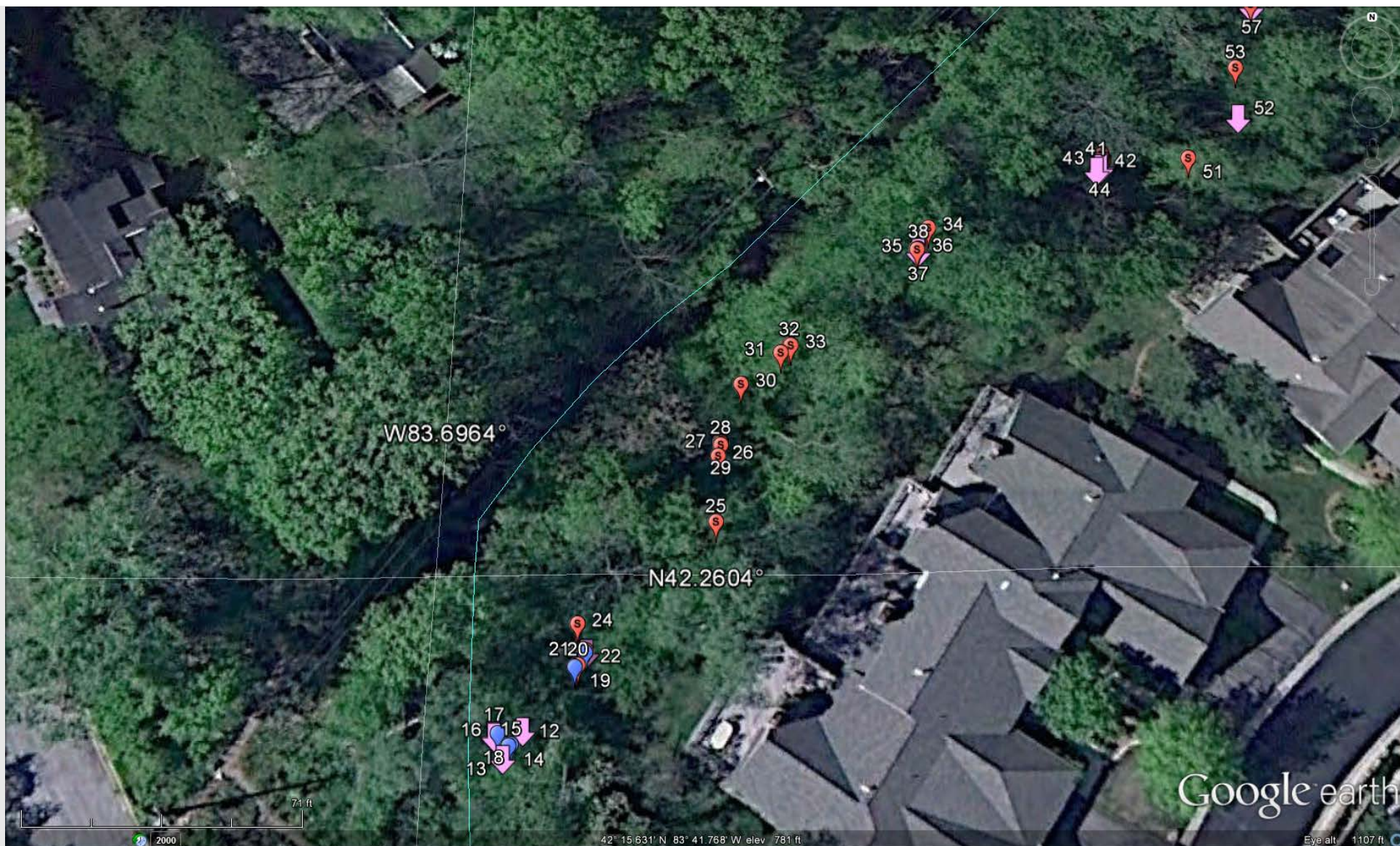


Figure 1. The original survey, prior to stream bank restoration. Pink arrows mark flags showing County drain easements. Red balloons mark trees to be saved within the easement. Blue balloons mark trees to be cut.

The accuracy of the geotagging of the photos was limited by several factors. First, the software in the smartphone has limits. Second, the geotagging of the tree is actually the geotagging of the camera where David stood to take the picture of the tree, rather than of the tree position, itself. He attempted to stand at a consistent distance from trees to ensure precision (but that is difficult in this terrain). The level of precision, however, was quite good—trees were in correct relation to each other and in close to correct relation to dwelling units.

The geotagged camera images were downloaded directly to a computer by plugging the smartphone into a recent Windows 7 desktop computer. The 191 images were stored in a single folder. That folder was then uploaded to the free software called "GeoSetter." From there, the geotagged images were batch-uploaded to Google Earth in a single operation (rather than entering each one individually). The GeoSetter software was able to take the underlying geocoded coordinates from the camera images, as well as the images

themselves, and make them correspond to the underlying coordinate geometry in Google Earth. We made color decisions to correspond with the actual colors of tags used on vegetation.

Accuracy, of registration of photo and Google Earth coordinates, using this sort of strategy was guaranteed. Hand placement would not offer that level of accuracy of registration. Overall, the results were sufficiently precise (although not accurate) to offer local residents a clear picture of what did happen in their local wooded areas.

When the camera GPS coordinates were obtained, a photo of the tagged item was also taken. The figures below show the photo pointing to a location. These pointing associations are all accurate.



Figure 2. A large number of new trees were planted; these plants were larger than shrubs but not huge trees. They needed to be staked but could easily be planted with a shovel.



Figure 3. The staked trees were planted in an area not serviced by the condominium association sprinkler system; this image shows clearly the effects of the drought in early summer of 2012 (through much of July).

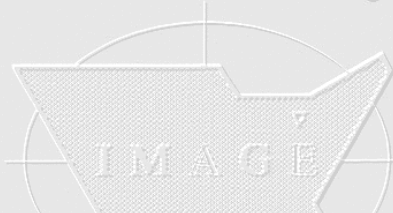
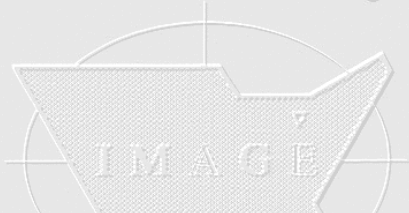




Figure 4. Some new trees did well, thanks to individual attention from local residents.

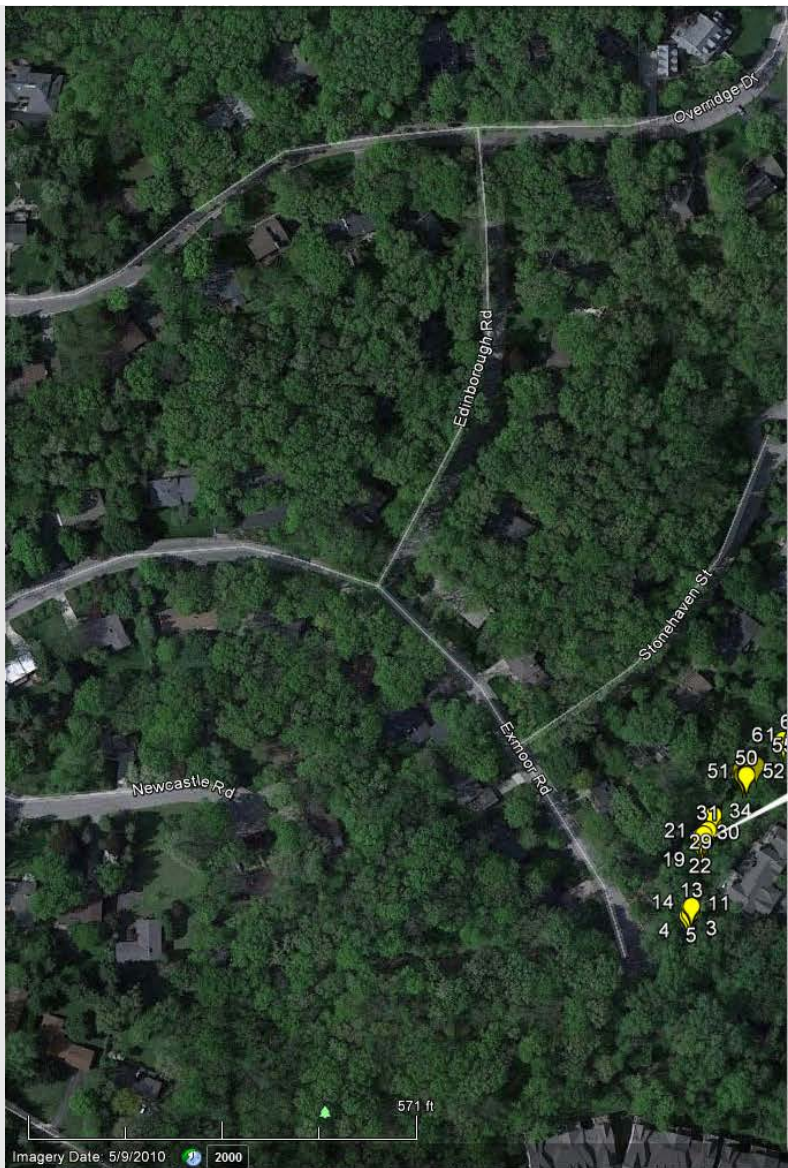
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Taken Date: 7/14/2012 4:01:58 PM  
 Coordinates: N42°15'37.79"; W83°41'46.17"  
 Model: VM670  
 Rating: 0  
 File Size: 2155996  
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 Altitude: 3340 ft  
 42° 15.649' N 83° 41.761' W elev 773 ft

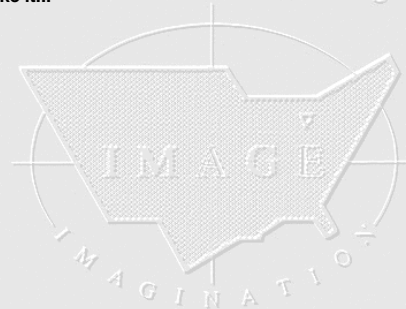
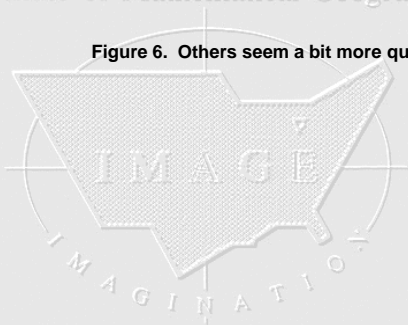






Figure 6. Others seem a bit more questionable...



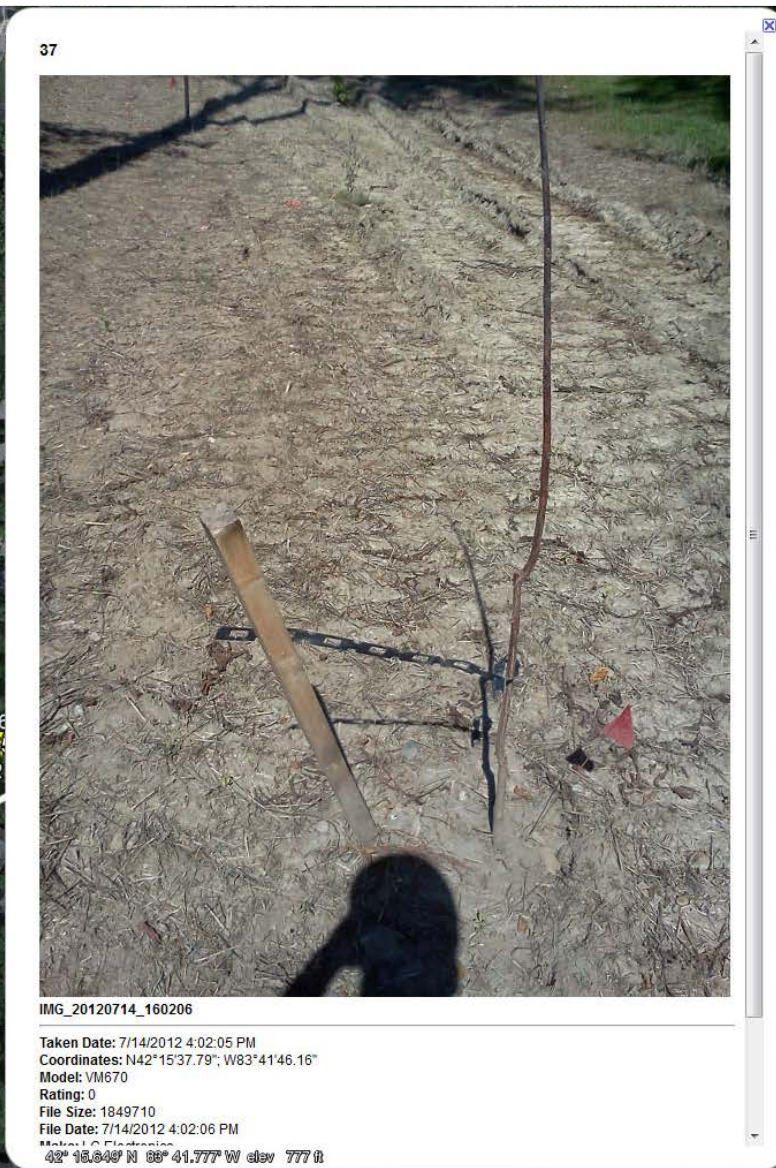
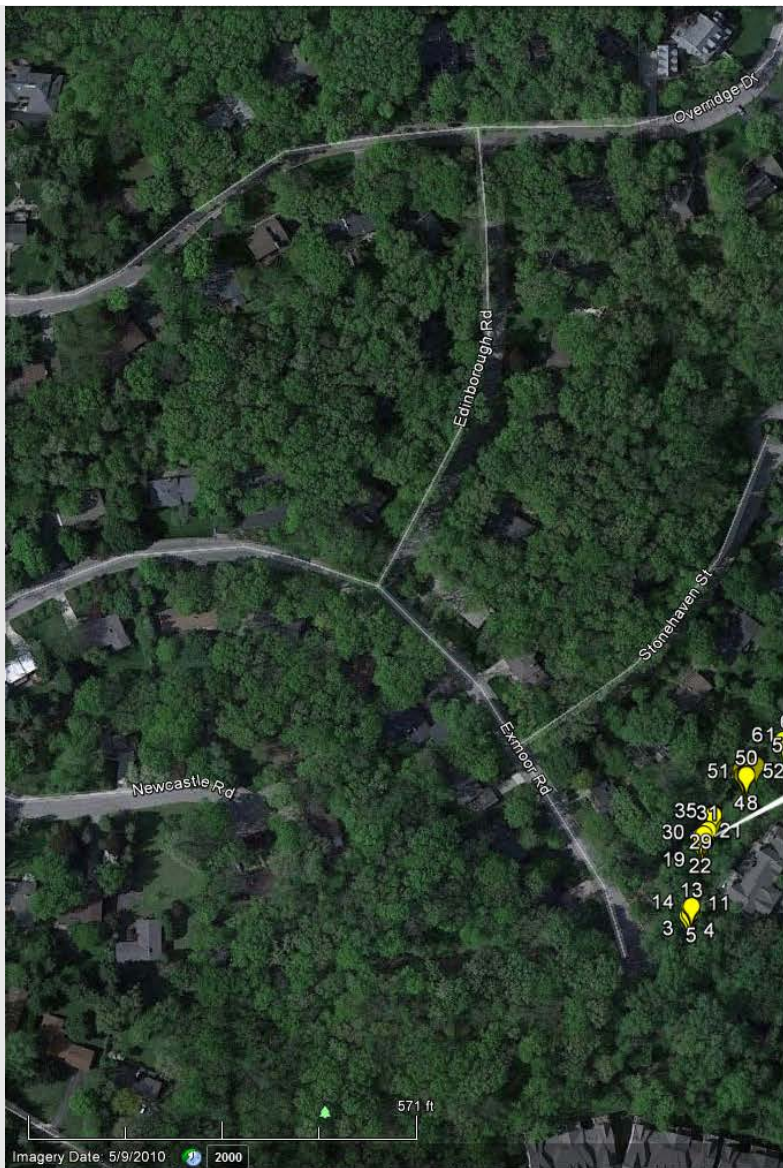


Figure 7. And then there were none? Trees like this one will apparently be replaced during the spring of 2013.

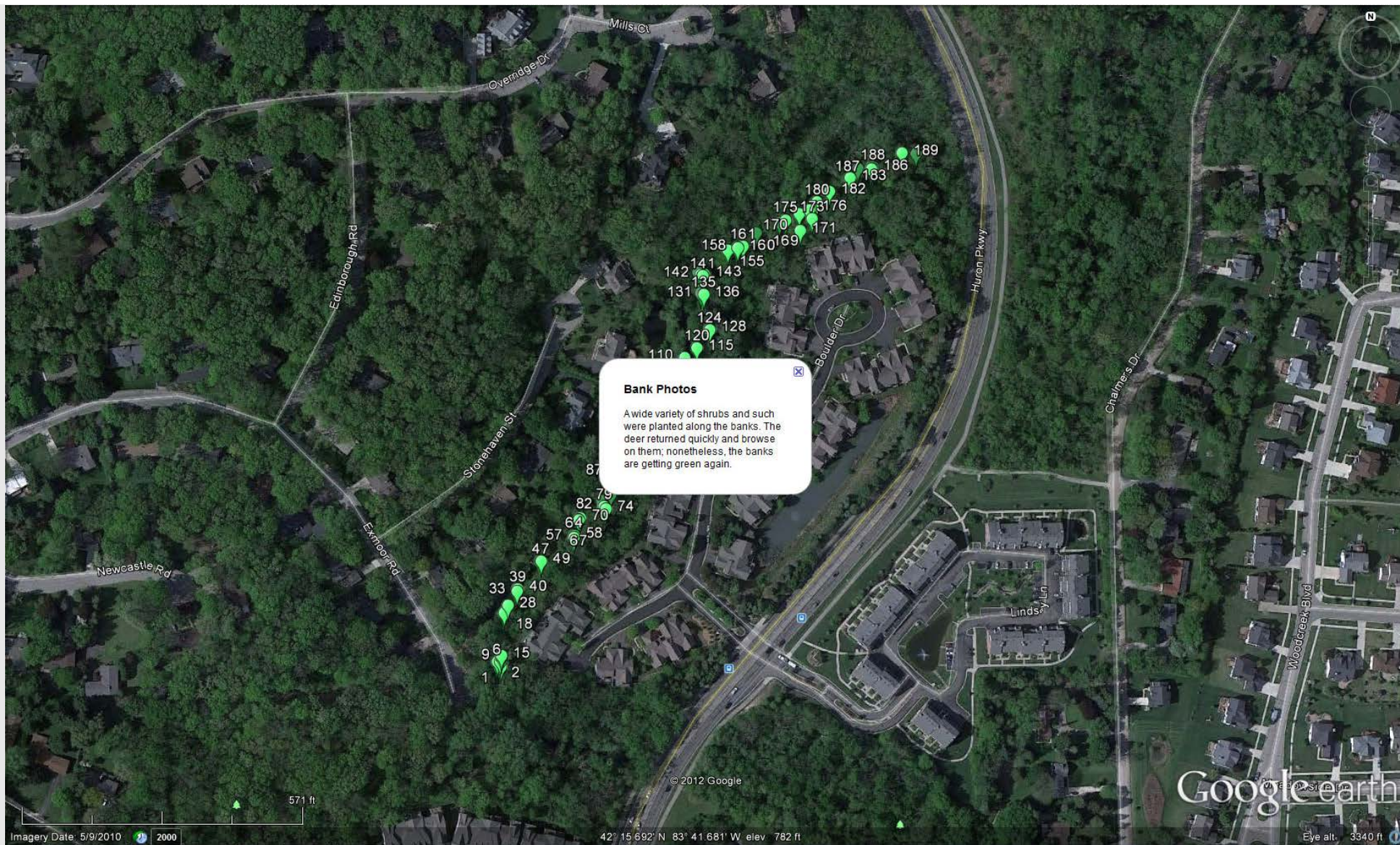


Figure 8. Distribution of photos of generalized bank vegetation.

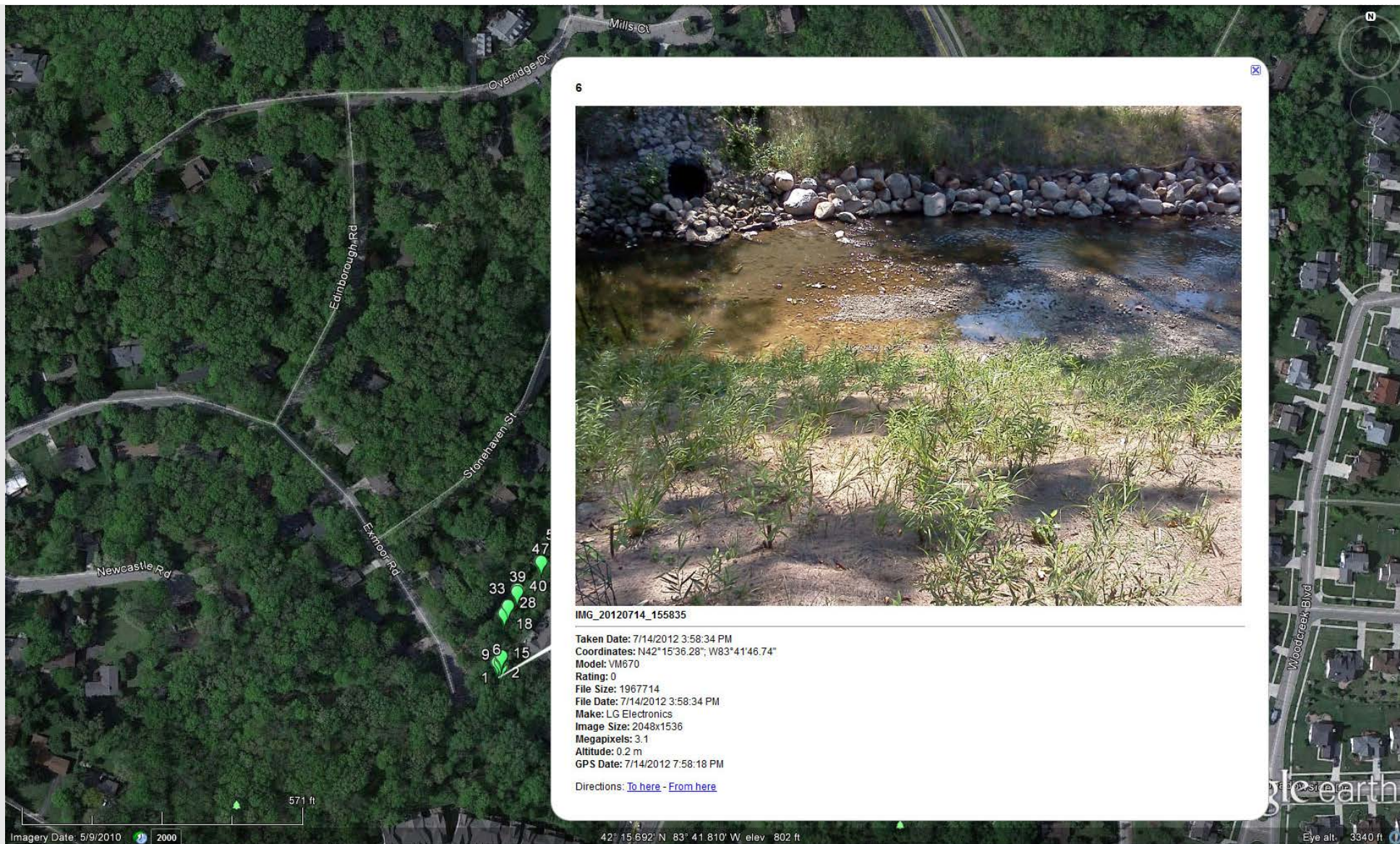


Figure 9. The bank appears to be filling in nicely with a mix of vegetation planted early enough to benefit from rains prior to the drought and to watering by persistent residents during the drought.

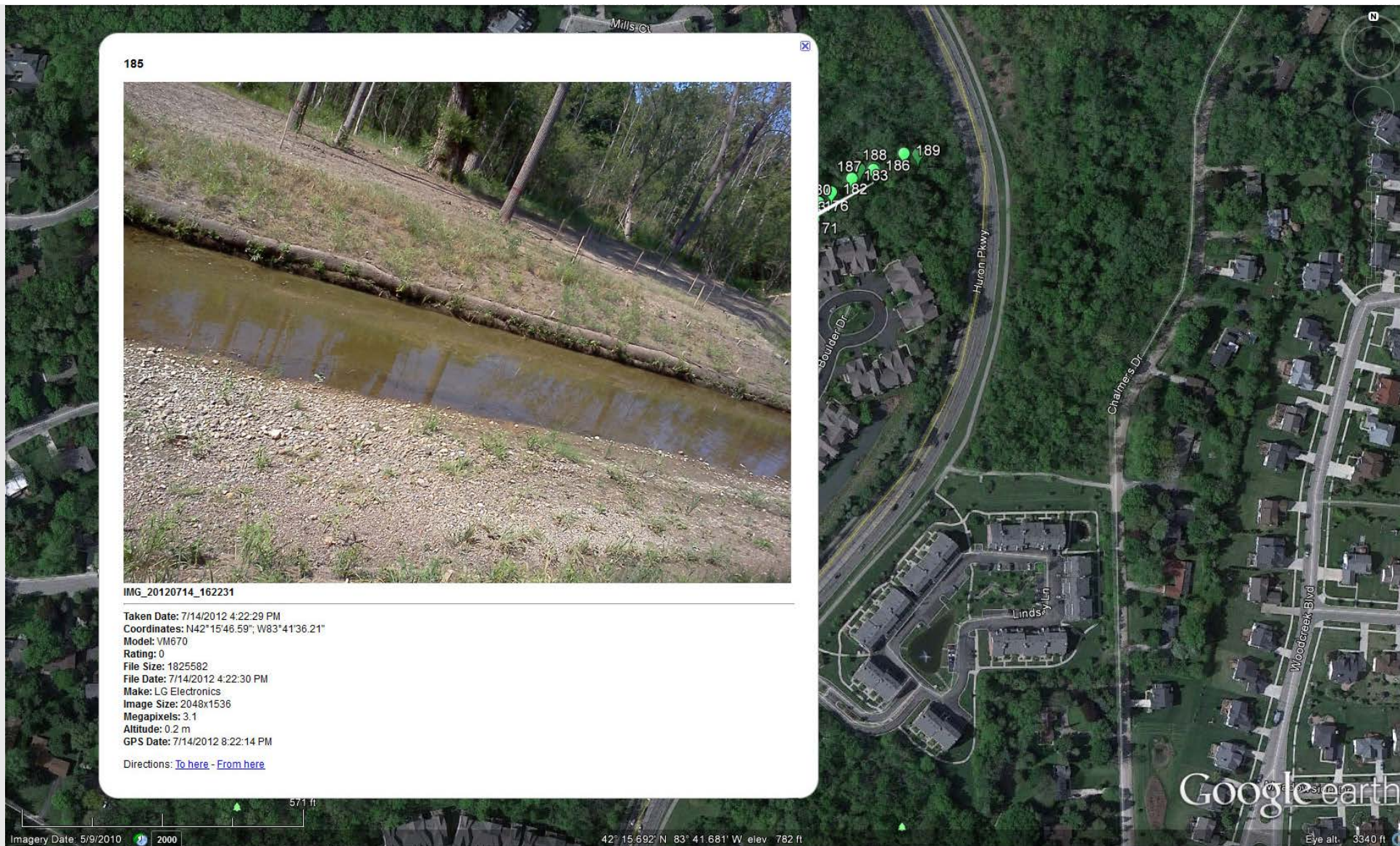


Figure 10. In other locations, the banks did not fare as well...the locational characteristics prevented supplemental watering. Still, by the end of July, some plants survive...will that survival rate be sufficient to cover the bank? Stay tuned...

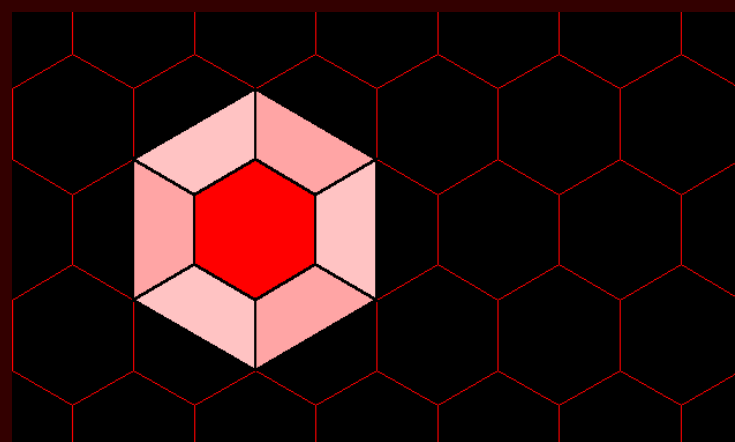
The neighborhood association established a tree monitoring committee. The committee was given a Google Earth file showing tree location and associated tag color. The easement was also geocoded. Prior to using the file, the neighborhood association president and the creator of the Google Earth display met with the lead County official and the lead engineer on the project to ensure a cooperative approach to file usage. Subsequently, the tree monitoring committee used the information in conjunction with field-checking vegetation. Geosocial networking was, and is (through remaining tree restoration scheduled in spring 2013), critical in developing a constructive relationship among the various parties adjacent to this well-meant and successful environmental stream-bank restoration project.

**References**

- Friedemann Schmidt. **GeoSetter**. Last accessed June 15, 2012: <http://www.geosetter.de/en/>
- Geosocial Networking, *Wikipedia*. Last accessed June 15, 2012: [http://en.wikipedia.org/wiki/Geosocial\\_networking](http://en.wikipedia.org/wiki/Geosocial_networking)
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Numerous people were involved directly and indirectly in this project that brought together County and City officials, Engineers from a local engineering firm, and members of the public from a variety of neighborhoods including differing residential types and zoning. We thank: Harry Sheehan, Greg Marker, Jane Lumm, Roger Rayle, Janice Bobrin, Matt Naud, and all the member neighborhoods of the [Huron Valley Neighborhood Alliance](#) and the individuals from those neighborhoods who participated in so many helpful ways.



**1. ARCHIVE**

**2. Editorial Board, Advice to Authors, Mission Statement**

**3. Awards**

1.



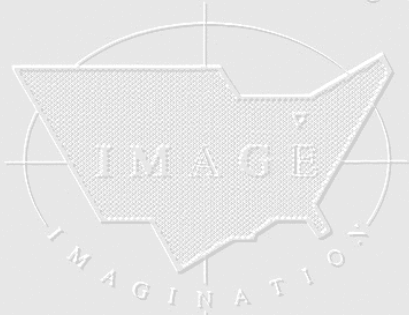
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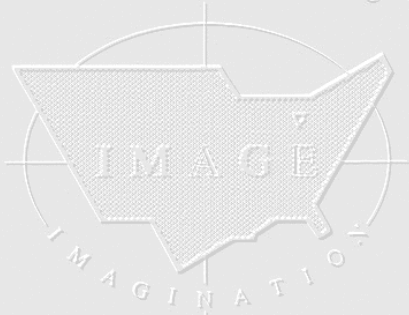
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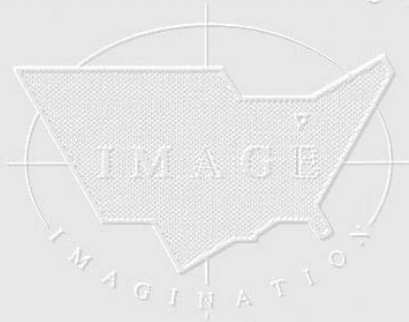


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*Solstice* was a **Pirelli** INTERNETional Award Semi-Finalist, 2001 (top 80 out of over 1000 entries worldwide)

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Congratulations to all *Solstice* contributors.

Remembering those who are gone now but who contributed in various ways to *Solstice* or to IMaGe projects, directly or indirectly, during the first 25 years of IMaGe:

**Allen K. Philbrick | Donald F. Lach | Frank Harary | William D. Drake |  
H. S. M. Coxeter | Saunders Mac Lane | Chauncy D. Harris | Norton S.  
Ginsburg | Sylvia L. Thrupp | Arthur L. Loeb | George Kish |**