Conservation Treatment of the 1860 Map of the City of Palmyra

by the Missouri State Archives' Conservation Laboratory

Office of the Secretary of State

The Missouri State Archives has the state's only publicly funded conservation laboratory. By statute, the conservators in the lab may only treat public records – those belonging to state or local government.

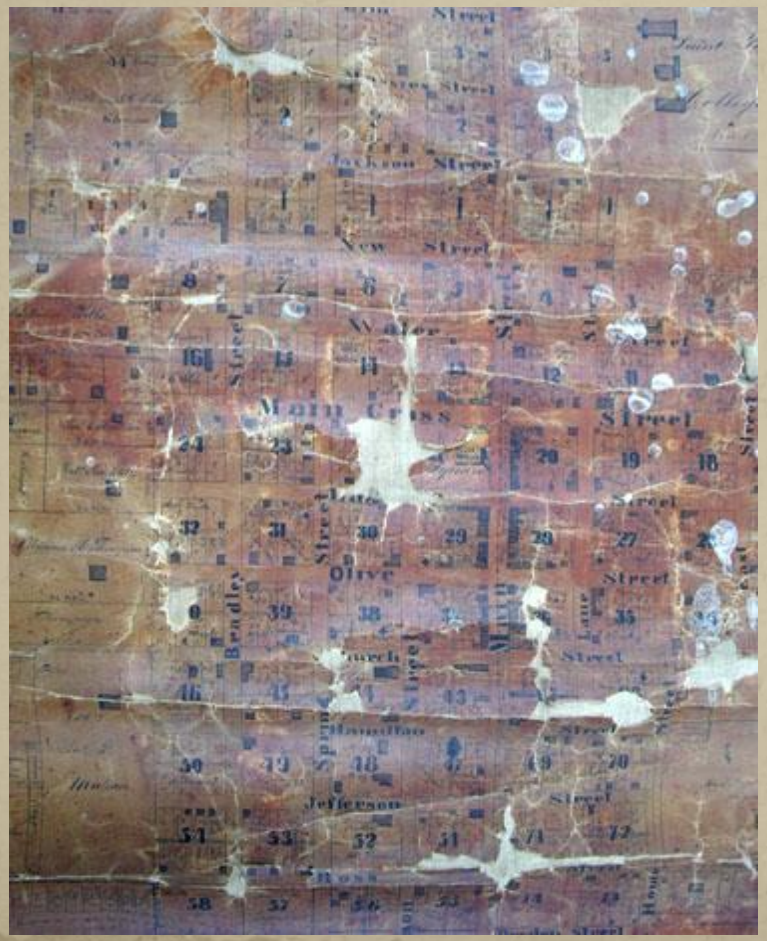
With only two conservators on staff … and literally millions of historical public documents that might need conservation attention … only the most historically significant books, papers, maps and other records are accepted for treatment in the lab.

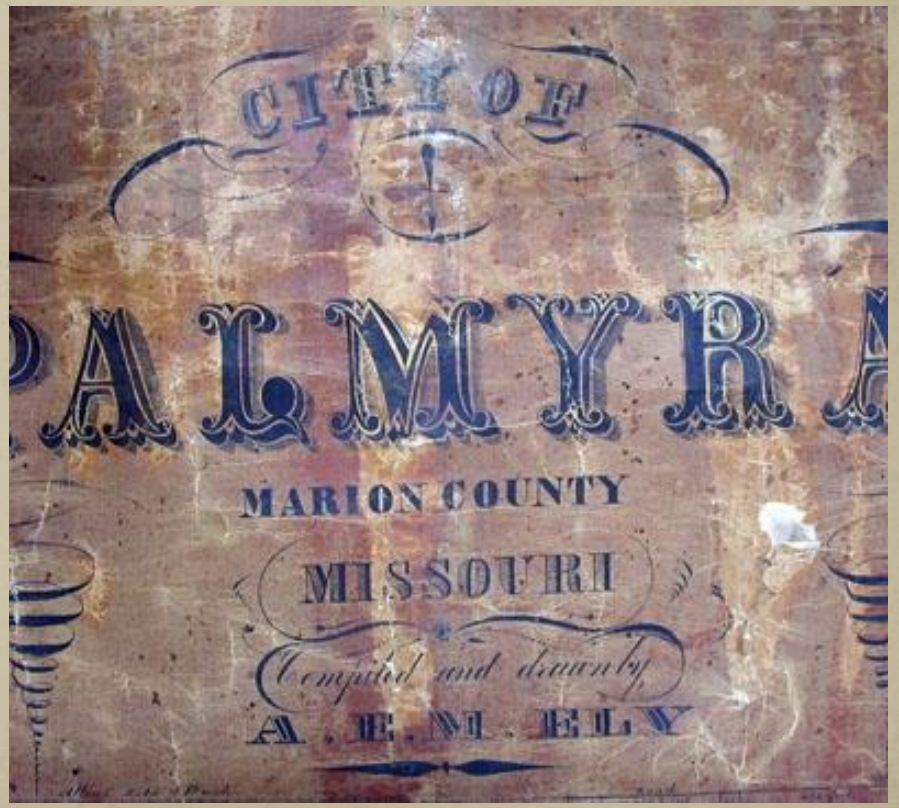
During 2008, two Archivists with the Local Records Preservation Program conducted a records inventory for the Palmyra City Clerk. During that project, they came upon a crumbling, rolled-up map. Upon careful inspection, they found it was an 1860 map of the city of Palmyra. It is common to encounter early 20th century maps of this type, but pre-Civil War city plat maps are rare in Missouri.

This map was particularly significant not only because of its publication date, but also because it shows cemeteries and other locations long forgotten, including the fairgrounds—the site of the infamous "Palmyra Massacre." Because of its historical significance, the Local Records Program agreed to provide conservation treatment.

The map was large, around 4½’ by 3’, and had seen better days.

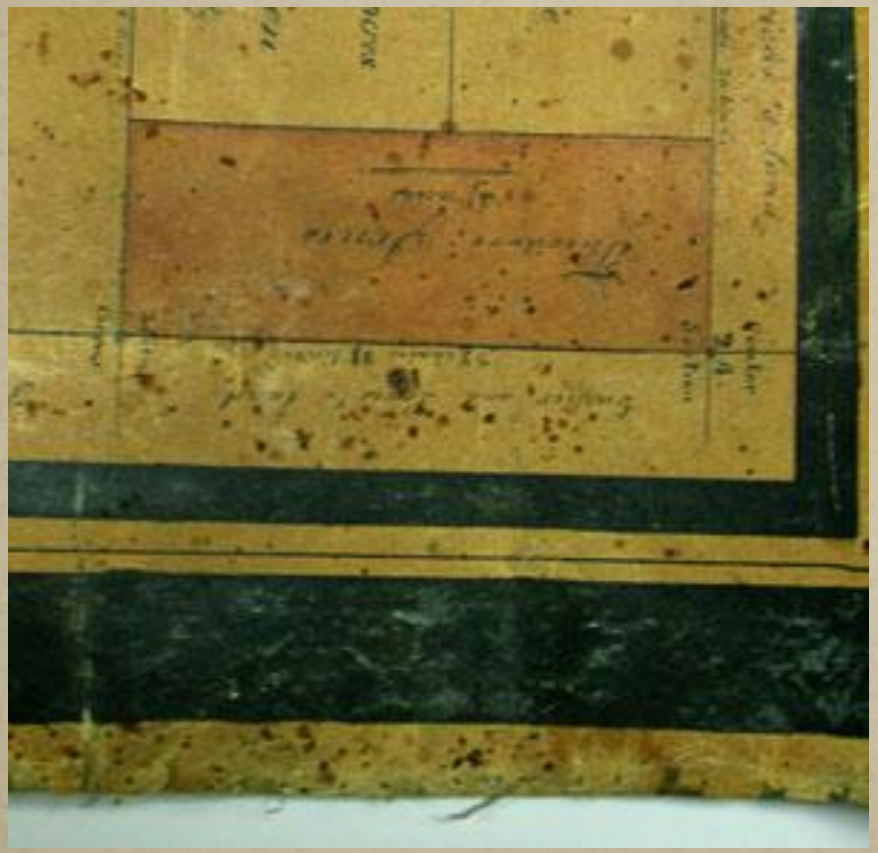
It had been varnished, and the varnish had darkened considerably over time, leaving the map a streaky, dark reddish-brown.

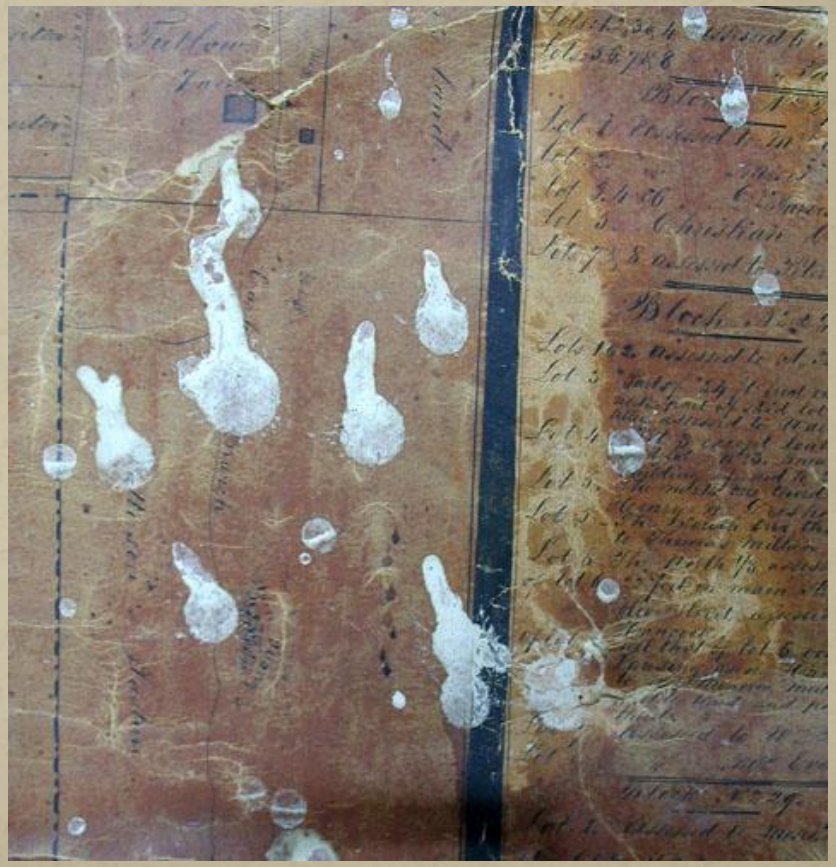




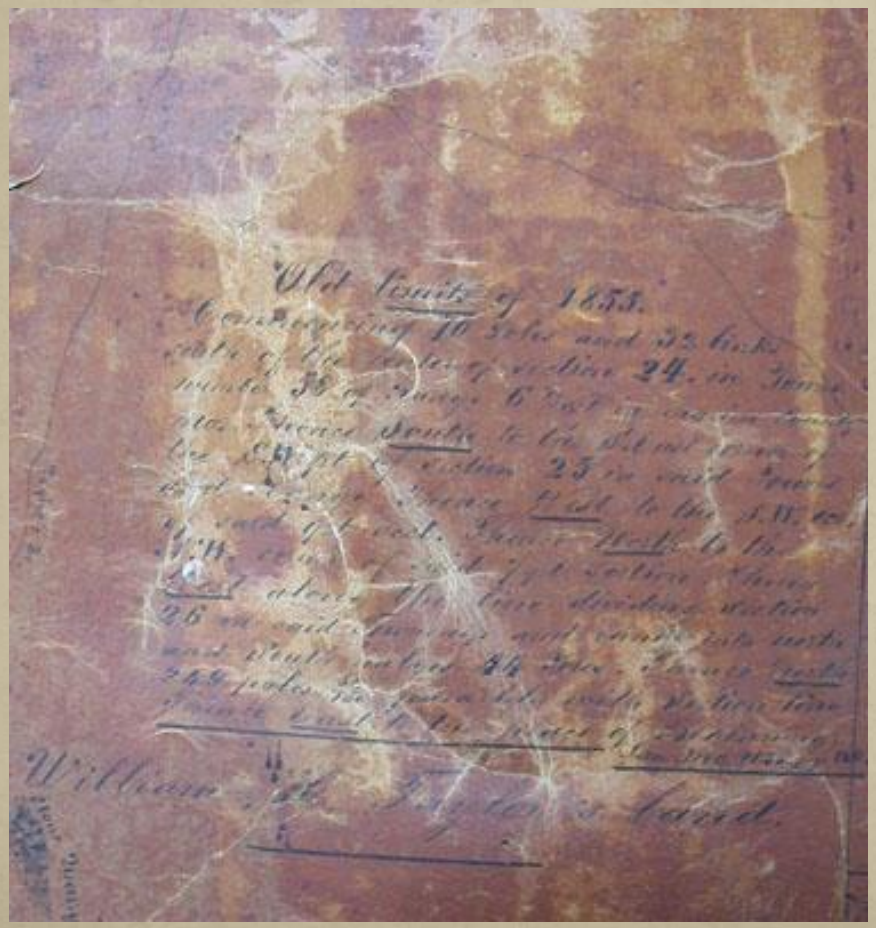
The map was also badly damaged, with many cracks, tears, breaks and losses.

There were numerous stains, insect accretions (frass) and discolorations. The most noticeable of these were several spots and streaks of what appeared to be white paint.





There were also several areas that appeared lighter than the rest of the map, possibly the result of fracturing of the varnish layer.



Removing the varnish was one of the most important things we could do to help the map. To accomplish this, we used cotton swabs dipped in a mixture of solvents, working inch by inch over the surface of the map. Here, the surface varnish has been removed from the right half of the map.

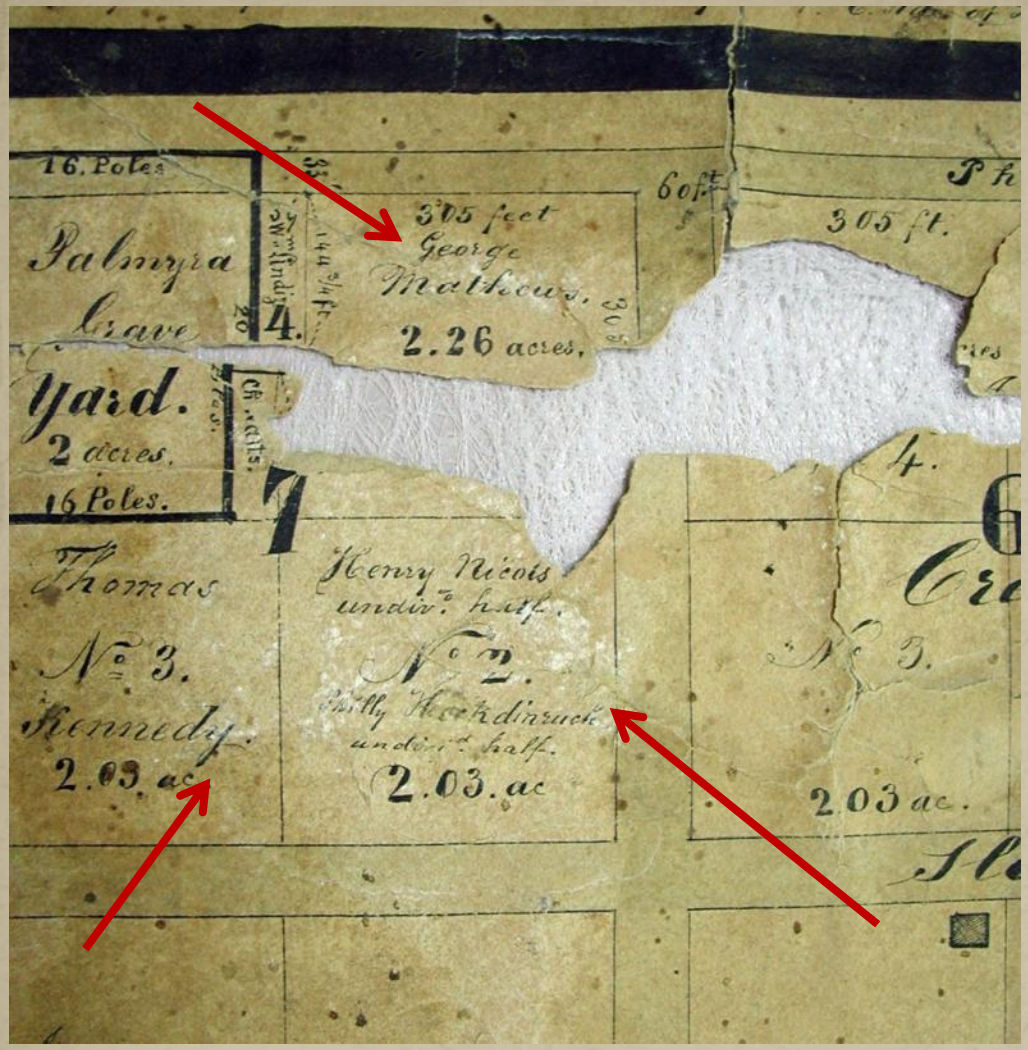
After the varnish had been removed from the entire surface of the map, we washed the map between blotters soaked with a mix of deionized water and calcium hydroxide. This would help pull some of the soluble acidic products out of the paper.

During washing, the adhesives holding the old cloth backing to the map softened, making it possible for us to carefully remove the cloth.

After the backing was removed, we very gently cleaned the back of the map with a Teflon scraper and damp cotton balls to remove as much of the old adhesive as possible.

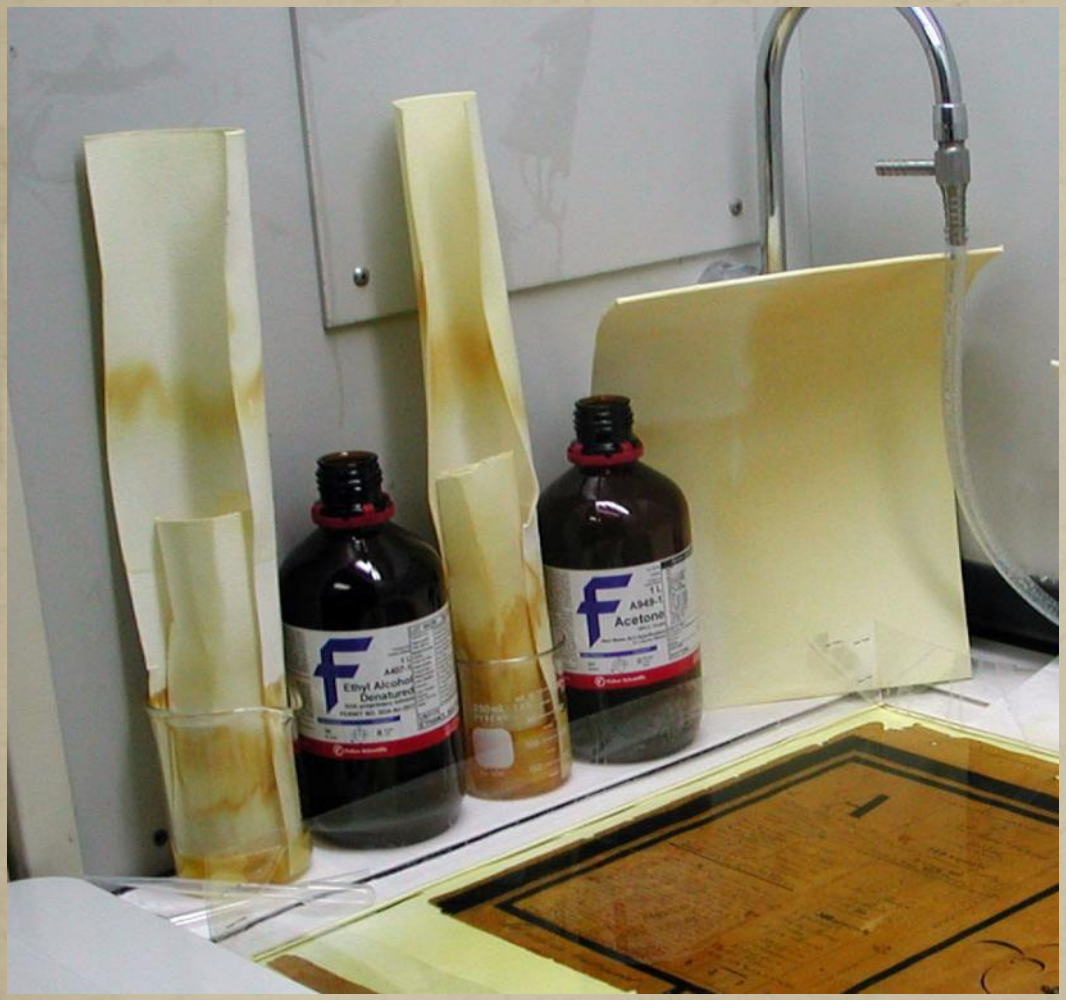
The map was washed for a total of 6 hours, with several blotter changes during that time. Without the cloth backing, the numerous holes, tears and weak areas in the paper were much more noticeable.

After washing, the map was considerably lighter than it had been before treatment. However, the paper still showed quite a bit of discoloration, and was very stiff and brittle.

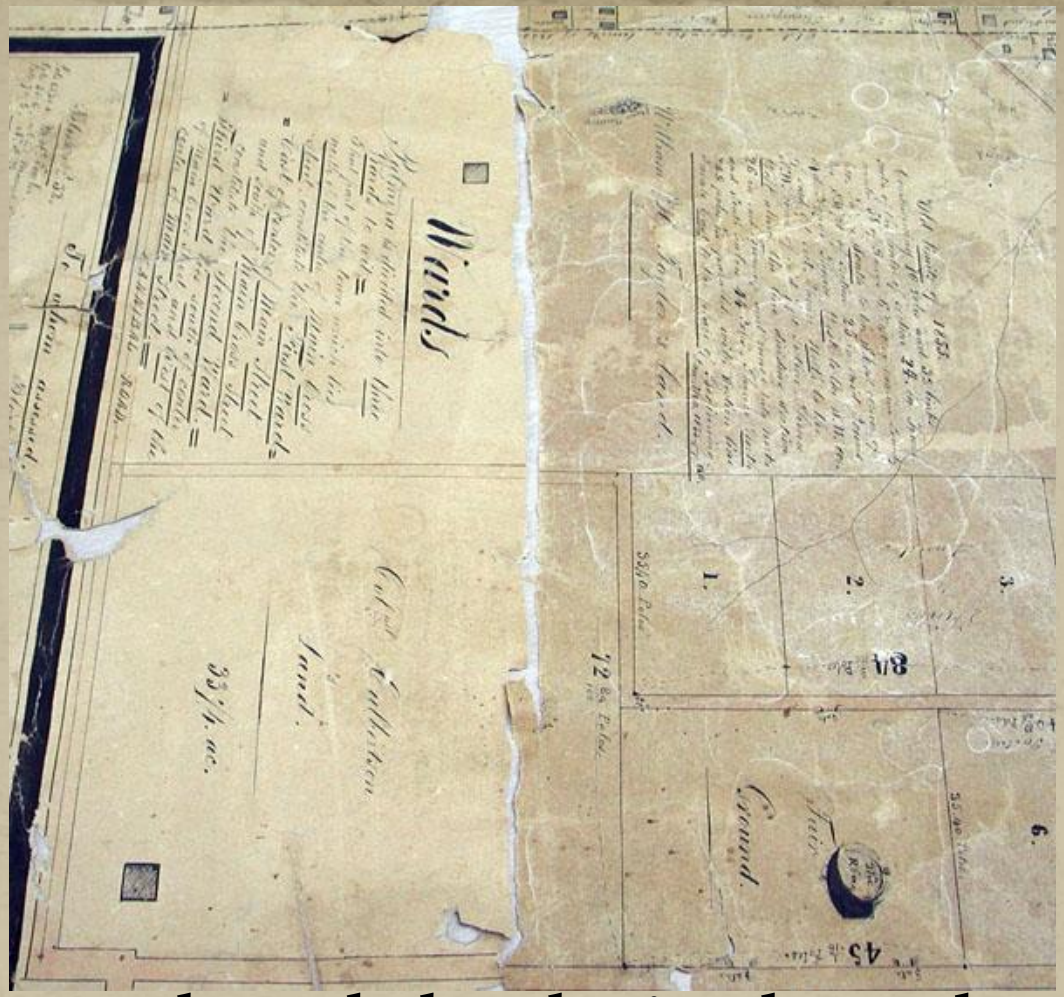


There were also white spots in many places, suggesting some varnish remained and had "bloomed" when wet. After some testing, we determined that the varnish had not only been on the surface of the map, but had penetrated the paper as well.

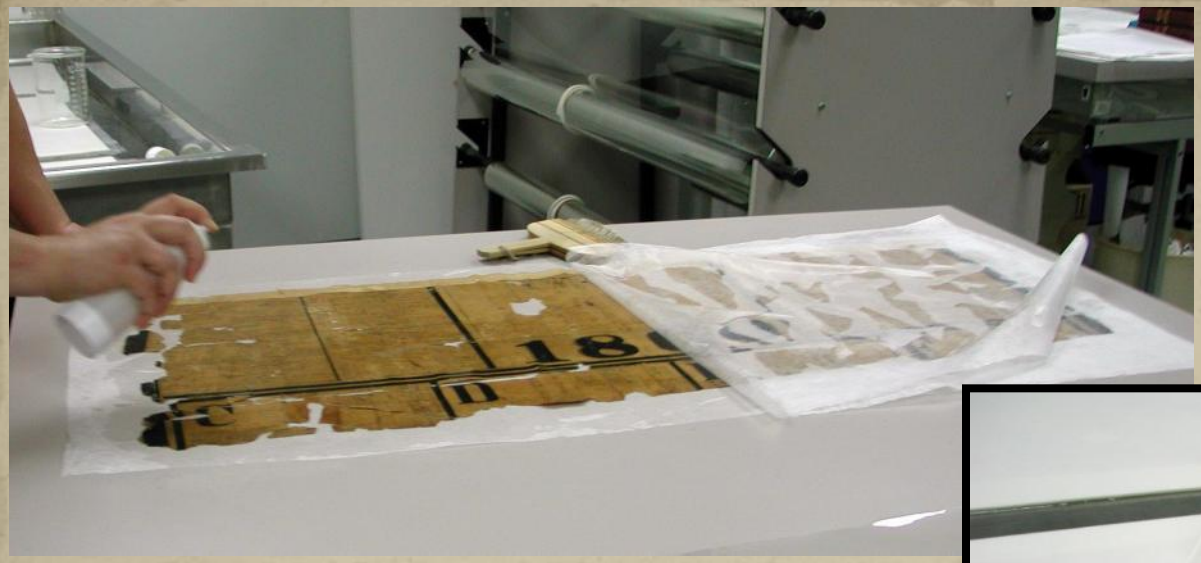
As the backing had been the only thing holding the map together, the removal of the backing had left the map in several pieces. We immersed each piece in a solvent bath to remove the remaining varnish.



We changed the solvents several times during this process, as they became discolored. Here you can see the brown varnish from the map being pulled into blotters as we disperse the used solvents in the fume hood.



This produced the desired result, and the paper became much lighter and more flexible. Here the left piece has been bathed in solvents, and the right piece has not.



After bathing each piece of the map in the solvent mixture, we again washed the pieces between blotters soaked with deionized water and calcium hydroxide.

During this second bath, we removed the specks of frass with cotton swabs.

After washing, the map was ready to be re-assembled on a new support. We chose a moderately heavy Japanese paper, which we toned with acrylic paints to better match the color of the map.

There are several different ways to back a document. We decided to do what is called a "Dacron lining" for this particular map, primarily because of the strength of this backing method and the fact that it is done with the map facing up, an important factor considering the number of pieces we were going to have to re-assemble!

The first step to “Dacron lining” is to paste out a piece of Plexiglas with a mixture of wheat starch paste and methylcellulose.

We then laid a piece of wet Dacron material over the pasted Plexiglas, add another layer of paste, then laid our Japanese paper over that. We pasted out the Japanese paper, then laid the wet map on top of it, face up. Here, the top two sections of the map have been laid in place.

The last large piece of the map, clinging to a piece of polyester film, was then brushed into place.

Then you wait ....

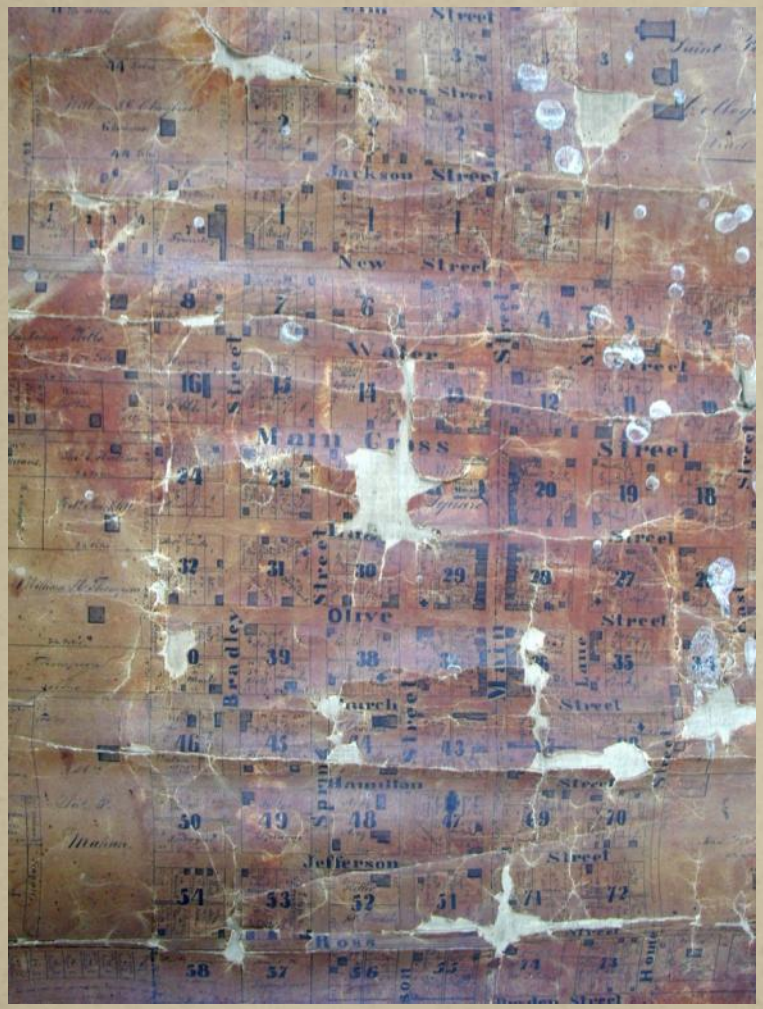
And pray .....

Good map!

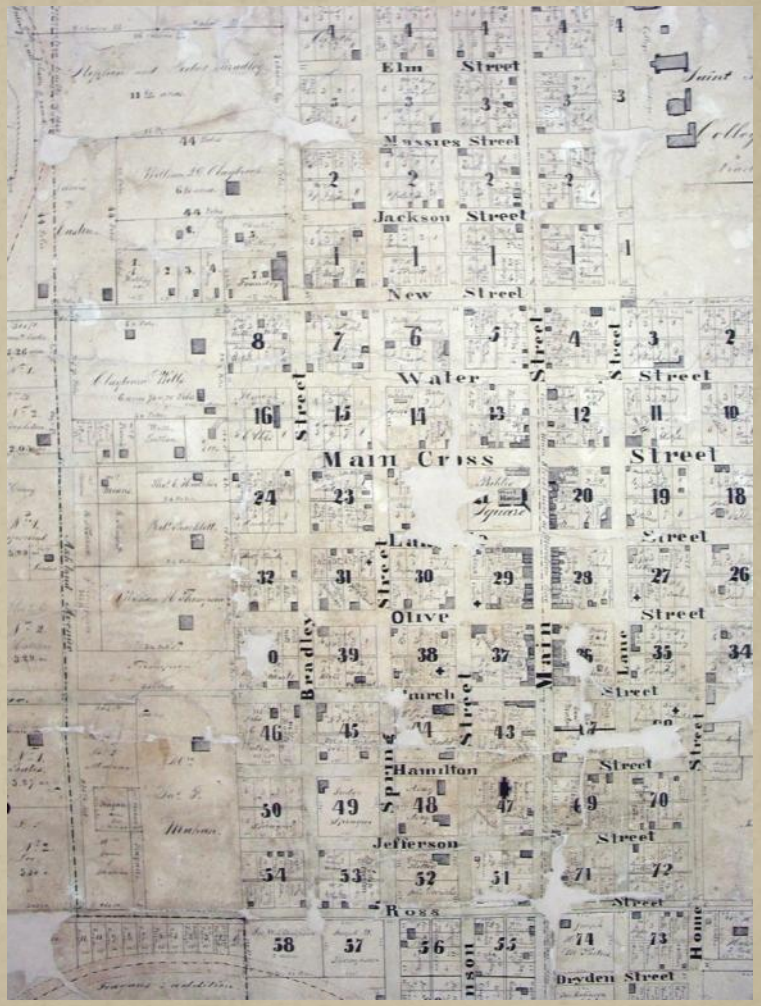
Before

After

Dark, streaky varnish



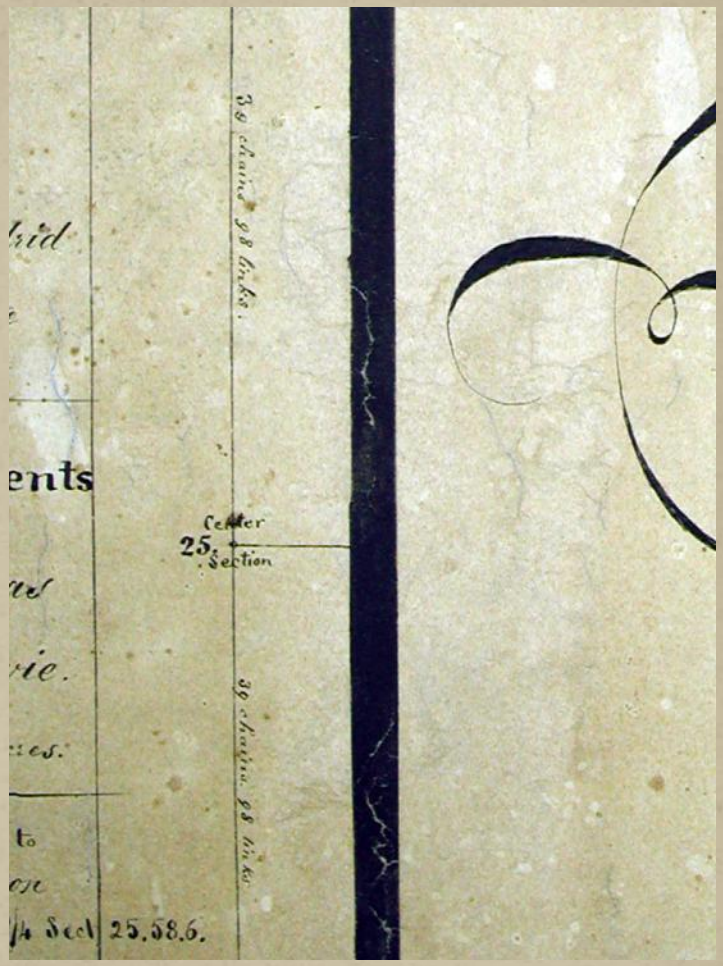
Before



After

Fractured varnish

Before



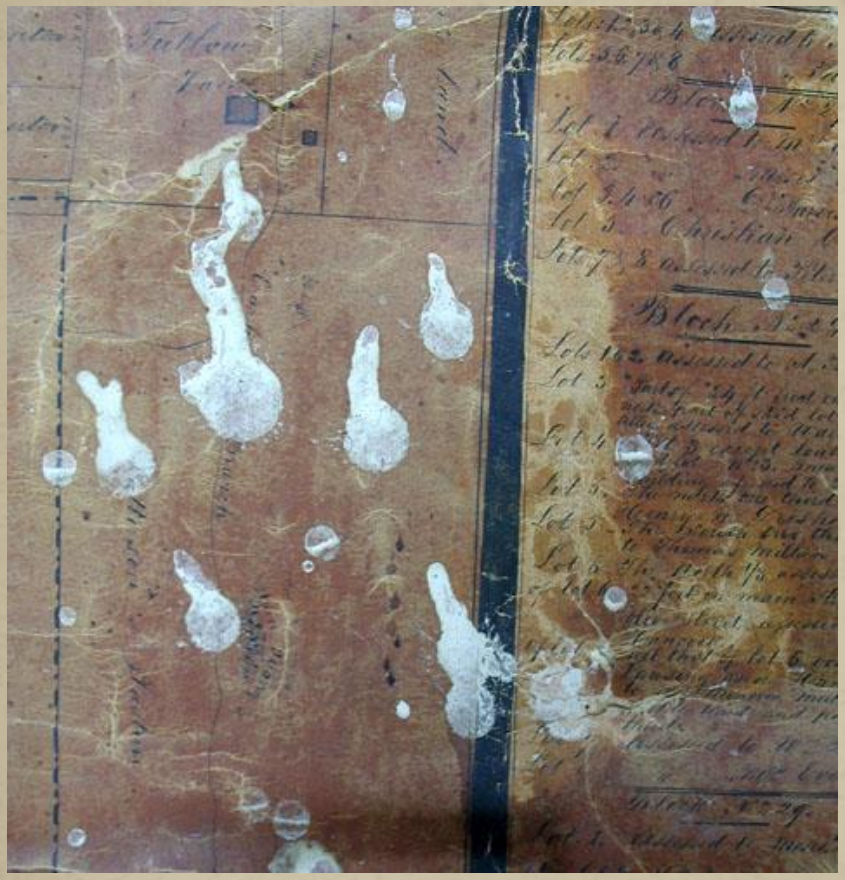
After

Cracks and breaks

Before

After

Paint spots



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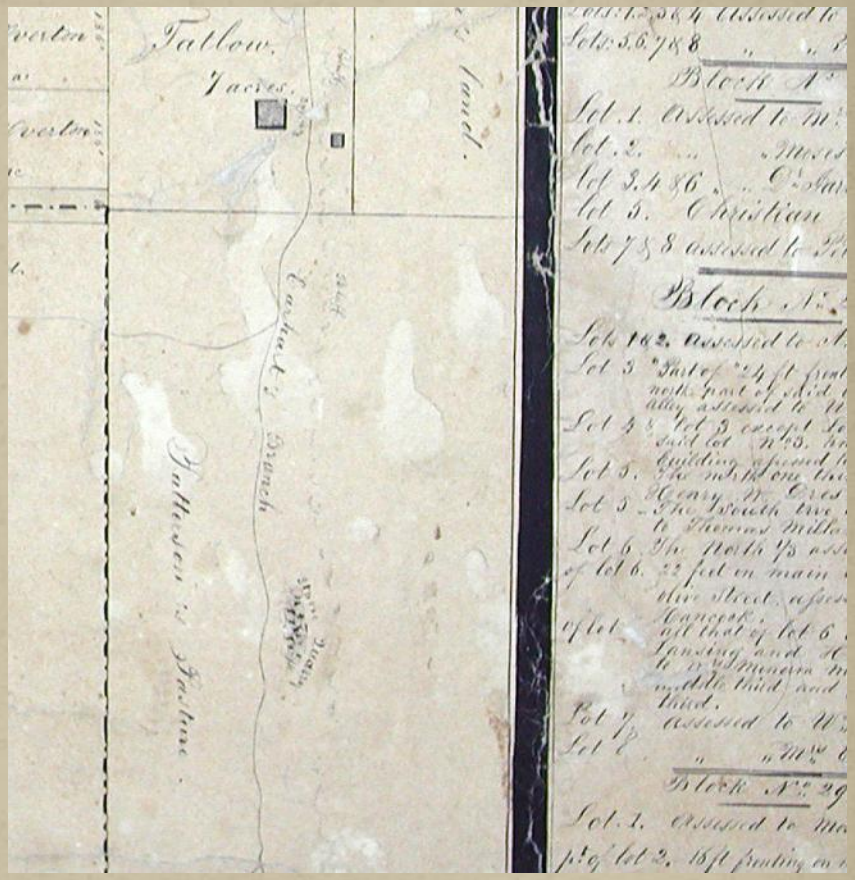
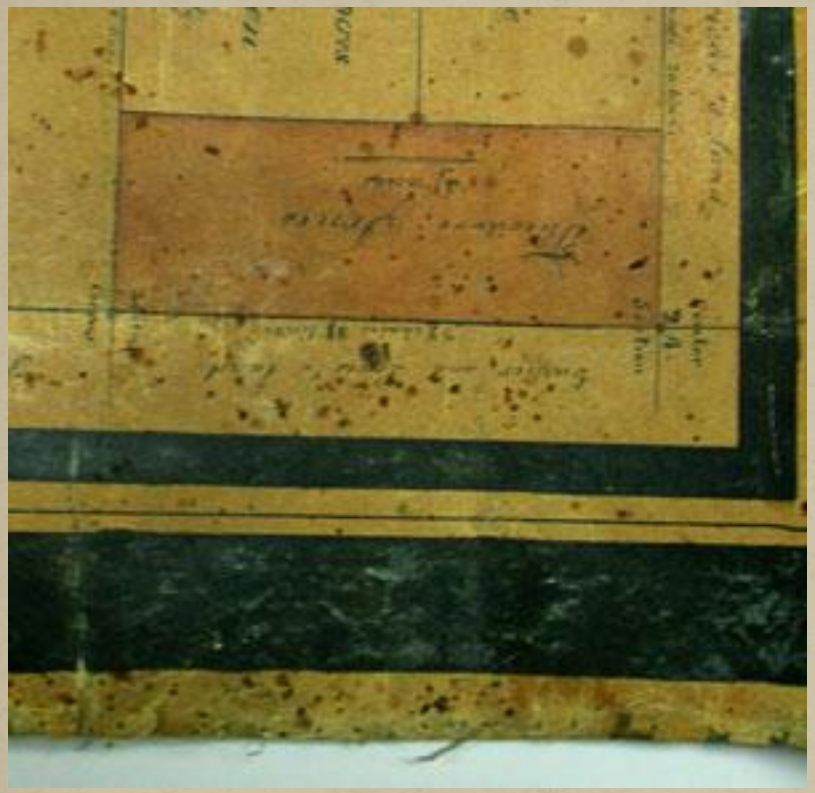


After

Frass



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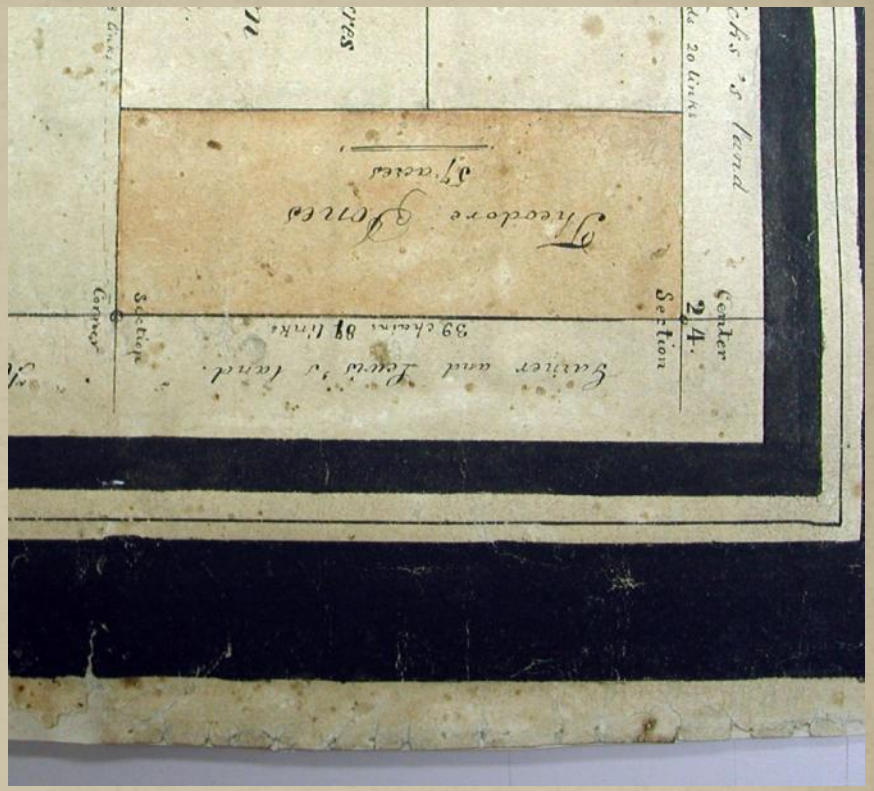

After