Cantonment Belle Fontaine 1805-1826

The First U.S. Fort West of the Mississippi River

David L. Browman
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A brief summary extrapolated from various unpublished archaeological and archival reports detailing the results of five seasons of test excavations from 1992 to 1997 at this National Register of Historic Places property.

Some sections, as indicated, may include information from research report analysis data by former Washington University students Jennifer Bonarek, Rachel Boyarsky, Marco Brewer, Tiffany Bruckert, Ellen Chapman, Myla Coffie, Laura Downing, Jennifer Fee, Kelly Gelpi, Rui Guan, Ronald Hampton, Joe Harl, Emily Hollinger, Mary Holst, Lauren Hosek, Lauren Hunter, Alexandra Jensen, Bobby Kahlon, Stephanie Kain, Ian Kalish, Sarah Keast, Meghan Kenny, Joanna Kovalski, Catherine Koziol, Amy Kramer, Aimee Kryda, Duo Li, Christopher Lockwood, Jane Lucas, Robin Machiran, Nick May, Juan Carlos Melendez, Bryan Miller, Ryan Nelson, Ryan Newberger, Ray Nichols, Stephanie Pan, Jason Patel, Rachel S. Popelka, Michal Quennoz, Jim Railey, Alex Rechlin, Toi Saale, Kara San Joaquin, Suzanne Marielle Scott, T. J. Silverman, Christine Simurda, Kathleen Sipe, Kathleen Stahlman, Sam Steinberger, Tim Stinson, Jessica Straatmann, Meg Thornton, Brian Tyler, Susanna Vaihinpa, Nicole Vanore, Joy Wang, Annie Way, or Adam Webb.
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Text organization and content.

Some aspects of the discussion of Cantonment/Fort Belle Fontaine in the following pages are in part supported by using analyses provided by Washington University – St. Louis student research papers. That research was part of the requirements for several years in my seminar on Historic Archaeology and explicitly included the understanding that the students were contributing to this consolidated report on the site. Thus the reader will see under each heading, where appropriate, the names of the students whose specific lab research that I integrate into the discussions of the materials covered in that section. Because the Belle Fontaine collections were worked on by the student analysts for a number of years, there often will be more than one student’s report assistance acknowledged under the section credits, because more than one student may have processed the same material as a class learning project in different years.

After I describe the development of the site itself in the first section, and the activities which impacted the Cantonment area after its abandonment in the second section, a bit more explanation for the rather unusual procedures and their rationale, which resulted in the specific format of this report, are provided in the third section, ‘Archaeological Investigations’. Subsequent following analyses sections include summary descriptions of the materials recovered in the archaeological excavations. Because I have now retired, all of the artifacts discussed in this report, curated under WUSTL Anthropology Department Archaeological Collection Control Number 96-2847, have been removed from campus and placed in ‘temporary dead storage’ in the department’s long-term storage facility at Washington University’s Tyson Research Center, pending probable later transfer to the University of Missouri system’s curation facilities. This also means that any material illustration relies solely on my files or in rare cases on an item that the students may have included in their reports.

The coverage of Cantonment Belle Fontaine focuses primarily upon the evidence for the second reincarnation of Cantonment or Fort Belle Fontaine from 1810 to 1826. The scattered cluster of log cabin-based buildings from the first version of the Cantonment site from 1805 to 1810, which was directly on the banks of the Missouri River, but unfortunately disappeared into that river more than 200 years ago, is briefly discussed. Fortunately the disturbed evidence of a portion of the cantonment’s second rebuilding, which was moved to a bluff above the river and the first site location, still exists archaeologically. Discussion is mainly limited to those features and manifestations which potentially might be recovered by careful surface collection and archaeological excavation at the second version of the Cantonment. Footnotes are integrated into the text.

The remains of Encampment/Cantonment/Fort Belle Fontaine are located on a few acres of the 1,000 arpent Land Grant #1909, T47N, R7E; or UTM Zone 15, 43/00/360-43/01/550N, 7/40/640-7/42/000E; or 38°49′36″ N, 90°12′59″ W. It was listed as National Register of Historic Places (NRHP) property #16000031 as of February 23, 2016. It was listed as a Missouri Lewis and Clark Natural Heritage site on August 11, 2005. Cantonment/Fort Belle Fontaine is registered as the state of Missouri historic archaeological site 23 SL 441.

Creation of Cantonment Belle Fontaine
(with report assistance from Ray Nichols and Suzanne Marielle Scott)

The formal ratification by the U.S. Senate of the treaty authorizing the Louisiana Purchase was passed effective October 21, 1803. This land purchase essentially doubled the size of the United States at the time, and the U.S. government was stretched thin to provide services for the new territory. Congress on March 26, 1804, divided the new territory into two segments: the southern part was to be known as the District of New Orleans, and the northern part was to be called the District of Louisiana. Subsequently in 1805 the names were changed to the Territory of New Orleans and the Territory of Louisiana, and in 1812, the northern half (where Belle Fontaine was located) once again had a name change, from the Territory of Louisiana to the Territory of Missouri.

On November 3, 1804, a treaty was signed in St. Louis with members of the Sac and Fox tribes, which among other items promised the Indians that the United States government would
establish a trading house or ‘factory’ in the Louisiana Territory convenient for them, the Osages and other Missouri River area tribes. Then acting governor General William Harrison was to decide the location of such a trading factory, which would be situated so as to control trade along the Missouri River. This establishment was to be under the authority of the War Department.

Following the Revolutionary War, Congress pruned the ranks of the existing army because the congressional majority argued that keeping a large armed force during peace was undemocratic, as well as too expensive. Thus on March 16, 1802, the authorized size of the army was reduced to 20 companies of infantry, 20 companies of artillery, and a small corps of engineers, for a total of 3,212 men of all ranks. The actual size of the military shrank even more over the next few years. By February 4, 1805 the size of the active Army had decreased to 2,579 officers and men, including 1,295 in the 1st and 2nd Infantry Regiments (Urwin 1988:40).

In December of 1804, a few selected companies of 1st Infantry Regiment army troops were ordered to relocate to staff the proposed new military post in the Louisiana District which was to support the promised Indian trading house. Troop companies from Michigan under the command of Lt. Col. Jacob Kingsbury at Fort Michilimackinac and Lt. Eli Brady Clemson at Detroit, and from Illinois under the command of Capt. John Whistler at Fort Dearborn, were notified of their transfer to the Louisiana Territory. These troops reached St. Louis in the summer of 1805 with orders to build and man the requisite military encampment facility associated with the Indian trading factory.

On July 23, 1805, General James Wilkinson, who had been named as the first Louisiana (only later Missouri) Territorial Governor, selected the site for this first American fort west of the Mississippi, Encampment or Cantonment Belle Fontaine, on the right or south bank of the Missouri River about four miles upstream from its confluence with the Mississippi River, on a part of Spanish Land Grant #1909 (Fig. 1). Land Grant #1909 consisted of 1,000 arpents originally claimed by Hezekiel/Ezekiel Laird/Lord. He had built a house, grist mill, saw mill and cleared farmland on his claim prior to dying in 1799, but then his estate was not settled after his death until 1803 (Billon 1888:391, Scharf 1883, 2:1886). The size of an arpent varied over time and geography, but during the period of the Louisiana Purchase it was equivalent to roughly 0.84 acres, which was why Land Grant #1909 was also referred to in documents as being roughly 800 acres.

Hence in July of 1805, Wilkinson, acting on behalf of the U.S. Government, purchased five acres of Land Grant #1909 for this first military post from its then new owner, William Massey, who had purchased it from the Laird/Lord estate only a short time before. Water from a freshwater spring, which earlier French settlers had dubbed Belle Fontaine, ran into the river at the western end of the new Cantonment parcel acreage. This spring was one of the reasons that Wilkinson said he had selected the specific site, because he noted that it was said to be able to provide a continual supply of fresh water estimated to be “competent to supply 1,000 men daily” (Gregg 1936:351-3). Wilkinson was not a completely personally disinterested party; he soon purchased for himself additional land from Massey immediately adjacent to the Cantonment land in 1806. Later, in 1809, Wilkinson then sold to the U.S. Government some of the acreage which he now owned next to the first Cantonment, which the government wanted to utilize for the relocation of the second iteration of the Cantonment to higher ground (Scharf 1883, 2:1886).

Site ground work for the first version of the Cantonment began almost immediately after the July 23 purchase agreement, with the clearing out of the trees and underbrush along the river bank for the fort project. In order to effectively prepare the levee for the Cantonment structures, the post commander requested 10 spades, 10 grubbing hoes, 16 axes, two adzes and 10 weeding hoes on July 31 for this site preparation (Gregg 1936:354). However, apparently too few axes had been requisitioned or received – Lt. Col Jacob Kingsbury (who was the first Cantonment
commandant but served there only for a short while before he left and was replaced by Capt. Thomas Hunt on October 29) wrote to his commanding officer on August 10, 1805, that although some of the main log buildings had been erected, more “axes are much wanted as those on hand are of a bad quality and not a sufficiency of them” (Gregg 1936:356).

The log-cabin style buildings of this first iteration of the Cantonment were all located along the river bank levee area. As roughly sketched by Lewis and Clark when they stopped briefly at the site on their return from their successful western explorations in the fall of 1806, this first Cantonment was a varied assortment of log buildings linearly and irregularly strung out along the levee area.

The first structures constructed at this initial site version were the blacksmith’s shop, the quartermaster’s store and the Indian trading ‘factory’. The structures were built of unseasoned ‘green’ logs with their bark still on, and generally without the use of nails. The roofs were of oak shingles, kept in place only by the weight of smaller logs laid horizontally across them. The soldiers cut logs for the structures, made any clapboards and shingles by axe, and calcined limestone for mortar as needed. While log cabins were built for the officers’ families, the lodgings for the soldiers themselves remained in tents on the dirt until last, when rough-hewn log floors set directly on the ground in partial waist-high walled hut structures, limited to four such huts for the troops of each company, were laid out for enlisted men in October of 1805. The entire 1805 encampment was estimated to be spread about 540 feet along the levee embankment (Gregg 1936:360-2, McDermott 1967:107-8). Even the ‘footprints’ of these first structures have long since been destroyed by subsequent Missouri River floods and erosion, which have completely washed away the bank area where the first version of the Cantonment once stood.

The primary activity for the Cantonment for these first few years seems to have been focused on furnishing and operating the Indian trading store or factory. This trading store/factory was run by Rudolph Tillier who was assisted by George C. Sibley. The initial inventory of goods sent to St. Louis for the factory on November 12, 1805 (Magnaghi 1981:401-404) included items which also would have continued to be useful later for the troops moving up to the second Cantonment Belle Fontaine on the bluff edge. These goods included ceramic plates, cups, creamers, and pint bowls; glass tumblers; and particularly munition supplies comprised of 33,000 gunflints, 5,200 lbs. of gun powder, and 3,000 lbs. of lead to make shot. The great number of gunflints indicated the relatively short use-life of that weapon component.

As the head of the Belle Fontaine Indian trading factory, Rudolph Tillier was not much of a record keeper, but even with his spotty records, it is clear that the factory did poorly these first few years. It did more trade with the St. Louis town residents and the Cantonment military personnel than with any of the Indians it was ostensibly created to serve. The location was very inconvenient to the Osage and other Indian peoples further west and hence the trading factory did little business with the Indians. Thus in April 1808, Tillier was notified that he was being terminated and the trading factory was being closed at the end of the season.

The bulk of the Belle Fontaine trading factory business and remaining inventory was then essentially moved to two new trading factories established in the fall of 1808 closer to Indian group. These two new trading factories, with inventories supplied in part from the Belle Fontaine trading factory as it was shut down. were situated at Fort Osage (Missouri), roughly 250 river miles west on the Missouri River, where Sibley was appointed factor after leaving Belle Fontaine, and Fort Madison (Iowa), a couple hundred river miles north on the Mississippi River, where John W. Johns(t)on, later the third Mayor of St. Louis, had been named agency factor. Business with the Indians quickly became much brisker at these new trading factory locales (Magnaghi 1981:409, 413-414).
It is possible that some of the items discussed in the following artifact sections derived from the initial 1805 inventory. But any other tag-end remaining goods from the Belle Fontaine Indian trading factory after it was closed in the fall of 1808 and the majority of its remaining supplies dispersed to these two new trading posts, would have been long since disappeared.

During the first incarnation of Cantonment Belle Fontaine, some well-known western explorers passed through Capt. Meriwether Lewis and Lt. William Clark camped opposite the later location of the Cantonment site on their way up the Missouri River in 1804 and their expedition was enthusiastically welcomed back two years later by troops at the new Cantonment on September 22, 1806. Lt. (later Gen.) Zebulon Montgomery Pike started both his first and second expeditions to the West in Julys of 1805 and 1806 from the Cantonment. His wife and family stayed behind, and their 1- or 2-year-old son contracted one of the insect-born illnesses so prevalent at the fort which killed so many of the troops there, and this infant died at the Cantonment in November 1806. During the later second iteration of the Cantonment, other well-known western explorations started their journeys west from the fort. As an example, Major Stephen Harriman Long and Col. Henry Atkinson set out from the Cantonment in June of 1819 on their Yellowstone Expedition to explore and document the headwaters of the Missouri River.

The files of unpublished Cantonment quartermaster correspondence at the National Archives help illuminate portions of the sequence of events and construction of the second version of Cantonment Belle Fontaine. (Correspondence File Records of the Office of the Quartermaster General, Fort Belle Fontaine, Missouri, 1808-1820. National Archives Record Group 92, Washington D.C. Location 8W2/11/11/F/Box 134. Xerox copies. Note: these files are now said to also be available on microfilm from the National Archives Regional Center, Chicago.)

When Colonel Daniel Bissell arrived as the third commander of the first iteration of the Cantonment on May 20, 1809, he observed that the buildings (less than four-years old) were in poor repair, and that the troops suffered excessively from poor health due to the miasma of the Cantonment’s placement on the river levee near marshy backwaters. Bissell reported to the War Department that the low river-bank location was particularly unsuitable, as it not only resulted in unacceptable susceptibility to disease and floods, but that militarily the low-lying location of the buildings on the levee left the Cantonment also intolerably vulnerable to any enemy attack from the bluffs directly above it. He set about first tackling the problem of troop sickness and then almost as quickly addressed the issue of the weaknesses of the fort location itself.

Illness had been a continual issue. For example, at one point in September of 1805 while building the first iteration of the Cantonment, Capt. Benjamin Lockwood who was in charge of the company of First Infantry troops recruited from Fort Michilimackinac, reported that 19 of his men had become too sick to perform their duties, leaving only 6 men able to continue work (Gregg 1936:354,358). General Wilkinson, upon visiting the new fort location on July 31, and observing the number of soldiers already ill there, subsequently sent a volunteer physician Dr. John H. Robinson and medicine to the camp. (This is the same volunteer physician who was involved with Pike’s 1806 expedition.) Three weeks later at the end of August when Dr. Robinson left the encampment and also left St. Louis complaining of illness himself, Wilkinson then sent Dr. Antoine Frances Pierre Saugrain up to the camp with more medicines (Gregg 1936:354-358). Dr. Saugrain had moved from Philadelphia to St. Louis in 1799, to become the town’s first doctor, and he had been involved in providing the Lewis and Clark Expedition with medical supplies in 1804.

Bissell immediately requested permission to secure medical help once again when he arrived in 1809 for the large number of sick troops, reflected with his billings for reimbursement for the assistance from Dr. Saugrain anew in 1810 and 1811. The lack of fitness situation at
Belle Fontaine continued so dominated by sickness that by mid-1811 a special nurse/matron was hired from July 9 to October 31 to assist at the post at what was being loosely called the ‘Belle Fontaine Hospital’. Later Dr. William Carr Lane, subsequently Mayor of St. Louis from 1823 to 1829, was listed as providing medical services to the Cantonment from 1816 to 1819, terminating when he resigned from the army.

At the time, the belief was that the damp and stagnant water conditions adjacent to the encampment caused ‘bad air’ which then resulted in the sicknesses impacting the troops. On one hand, even though drinking water came from the Belle Fontaine spring, the poor-quality cooking and washing water from the river seemed to be a likely contributing source to the rampant dysentery the troops experienced. But even more deadly for the location were the yet-recognized perils from the insect vectors associated with the stagnant water such as the mosquito-borne diseases of malaria and St. Louis encephalitis. The solution seen by Bissell in 1809 was to move the encampment to a new location away from the ‘bad air’ to reduce deaths.

There was a cemetery established about 100 yards or so southwest from the Cantonment buildings, which during the period of 1805 to 1826 had at least 30-40, perhaps more than 100, individuals interred who had died from the illnesses prevalent. Among the burials included were, as just noted, the son of Gen. Zebulon Pike, who died at the first fort; Capt., later Major, Russell Bissell, brother of Cantonment commander Gen. Daniel Bissell, died at the first fort; Col. Thomas Hunt, commander of the first fort for only a short period before he died, along with his wife, and grand-daughter; Capt. Benjamin Lockwood’s child, died at the first fort; William Sears, died at the first fort; Hannah Stark the wife of Capt. Horatio Stark, and their infant son, died at the second fort; Major John Whistler, died at the second fort; and many others. (For evident reasons, deaths of officers or family members were often noted by name in the Correspondence; of enlistees essentially by numbers of deaths only.)

In 1904, the Daughters of the American Revolution (DAR) in collaboration with Judge Walter B. Douglas, president of the Missouri Historical Society, received permission to have all the individuals whose graves were marked by surviving headstones dis-interred and moved to the military cemetery at Jefferson Barracks. Major Thomas Cruse, local Army quartermaster, assisted by Mr. P.V. Rabbitt of the Army, were tasked with overseeing the excavating and moving of the burials to this national cemetery. Rabbitt was quoted as saying that their crews had searched for burials in an area of about 10 acres, but that “a part of the graveyard is now overgrown by an orchard of some years’ standing. It is probable, therefore, that all of the bones may not be secured for removal” to Jefferson Barracks National Cemetery (Anon 1904:1).

According to the DAR information, there may have been a total of as many as 20 officers and 100 enlisted soldiers originally buried in the Cantonment cemetery, but the 1904 newspaper stories and Norton (1911:338) recorded the recovery and moving of only 33 burials with headstones. The first newspaper stories reported that the War Department was searching their records and planned to erect a memorial at Jefferson Barracks with a complete list of the names of service members from any burials not recovered and moved. But after waiting with nothing forthcoming from the War Department, the Daughters of the American Revolution themselves later erected a plaque which is still at Jefferson Barracks, with the dedication “Memorial to the unknown soldiers, who died while in camp between 1805 and 1826 at Fort Bellefontaine.”

If thirty-three were all the headstones with burials which were relocated, then there well may be a considerable number of currently unmarked burials still at the original cemetery now in the St. Louis County Park managed lands; additional research is necessary. As was typical at the period for poor folks and slaves, wooden markers seem also likely to have been erected for the lower rank enlisted troopers; such wooden markers would not have survived the elements over time. If possible, a complete list of names of the Cantonment Belle Fontaine individuals buried
in the now decertified cemetery would be useful to obtain from the War Department or National Archives, as no doubt there may be historic documents and correspondence relating to these individuals wherein their tribulations and illnesses at the Cantonment were detailed which would enrich our record of life at the post, as well as such a list helping to clarify how many unmarked burials still remain at the old Cantonment, now County Park, area.

Lt. Col. Daniel Bissell (later General) subsequently received authorization later in 1809, after his petitions were received by Army headquarters, to purchase additional land and rebuild the Cantonment, locating it on higher ground away from the ‘bad air’ and in much more secure location militarily. He selected a site on the edge of the adjacent bluff about one hundred feet higher than the river bank area, a location where the post could still have overwatch over the river traffic, but where it was in a much better location regarding military defense as well as reducing disease threats to the troops by distancing them from the (disease-carrying insect) ‘bad air’ stagnant water zones (Figs. 1 and 2). In 1810, he sent his suggested plans for the second Cantonment to the Army headquarters, which approved them.

Bissell had preliminarily proposed that the new Cantonment should remain within 150-200 yards of the freshwater Belle Fontaine spring; that it should be enclosed in a stockade; that because brick was virtually impossible to secure that limestone would be used in its place for any cellars, hearths and chimneys; that this limestone would be obtained from a potential quarry about 600 yards distant; that lime mortar would be made by calcining limestone; and that the labor by the soldiers would be used to not only obtain the logs but to produce the lumber from the logs they secured for boards, beams, and shingles. He requested funds to purchase window glass, nails, hinges, locks, and other necessary hardware from local merchants and to hire carpenters as needed for an estimated roughly 30 structures planned within the new rectangular stockade layout. The Cantonment arsenal to be built was of particular concern to Army headquarters, but although Washington War Department sources had suggested the arsenal be constructed of brick, Bissell successfully argued that a well-constructed wooden building would equally serve the purpose. The Secretary of War’s letter of April 18, 1810, instructed Bissell to construct sufficient log huts to accommodate as many as four companies of troops, including officers’ quarters; to build an arsenal and magazine with sawn timber or boards and shingles securely nailed; and to also include the construction of a blacksmith shop (McDermott 1967:112). The soldiers’ huts were to be built with logs and with roof shingles once again held in place with just the weight of wooden poles or timbers laid horizontally across them.

The Cantonment ground area for this new encampment had to be cleared of underbrush and trees, and with this second version containing space for a central parade grounds, the land required more preparing and levelling. Thus on July 13, 1810 (Correspondence File Records), the Cantonment staff under Bissell first requested tools and supplies for site clearing and preparation of the new location. After complaining that the Cantonment had initially only received three axes for this purpose, Bissell and the staff sent back new requisitions later in July, listing the need for “two or three gross of files, assorted spades, augers, and not less than 40-50 felling axes”. They also asked for “a sash plane, a grooving plough, an iron match plane and a spoke shave (large)” and requested funds to build two carts and purchase a pair of oxen to pull them. (A word of explication: a sash plane was a special carpenter’s plane with a notched cutter for trimming door and window sashes; a grooving plow and a match plane were both special planes for making notches, tongues and grooves for joining planks; and a spoke-shave was a blade held horizontally by a pair of opposing end handles for debarking the logs as well as smoothing log surfaces). In addition Bissell requested approval for the necessary hardware and window panes for the structures to be constructed, indicating that for the now slightly revised estimate of 30 to 40 buildings, 15 would need hardware for two doors and glass for two windows
of 15 lights (panes) each, and the remaining structures would need similar materials for one door and one window of 12 lights each. The plans submitted outlined an enclosed essentially rectangular area for the entire Cantonment complex of roughly 280 feet N-S by 400 feet E-W.

One structure built almost immediately, for both the first Cantonment iteration in 1805 and the second iteration in 1810-1812, was the blacksmith shop. While in hindsight I can fully understand the need for such a practical facility, it was not one that I had initially envisioned as a critical part of an early frontier fort. But the troop commanders were well aware of its necessity and carefully specified its inclusion in plans and made sure to immediately build and supply it as part of the construction phase as well as for the subsequent routine fort maintenance.

Timber for the Cantonment construction had come from trees cut and floated down the Missouri River to the site, because there were not sufficient good trees for building purposes immediately adjacent. Soldiers split the logs into clapboard and into shingles as needed. The soldiers’ quarters and the majority of other buildings were essentially end-notched and joined log cabin-style huts. Shingle preparation was listed as being from ash trees preferentially if available, oak secondarily. Such limestone as needed for the main administration building foundation or for fire hearths for the cooking huts was secured at a nearby limestone cliff face, estimated to be about a third of a mile away.

The War Department had instructed Bissell to construct an arsenal which could be utilized to supply local defense requirements and also supply other new forts in the Louisiana Territory as needed. For a military installation, such an arsenal would be a critical structure. Hence while the construction of other structures in the second iteration of the Cantonment during 1810 to 1812 were poorly documented in the quartermaster correspondence files, there was a bit more information on the arsenal. Description of the nails, window glass, and other hardware used in the construction indicated another set of possibly diagnostic artifacts to be recovered in archaeological excavations in addition to the weaponry. As it was officially known, the ‘Arsenal Magazine and Armory’ construction was supervised by Lt. Ethan Alfonso Allen of the First Artillery. (Allen was the son of the renowned Ethan Allen of the Green Mountain Boys in the Revolutionary War.) On March 15, 1811, Lt. Allen submitted a bill for 18 ash trees he had purchased for making shingles; on April 15 a bill for 129 lbs. of nails and two padlocks; on April 18 a bill for 32 ½ lbs. of 6-penny nails, and 31 lbs. of 8-penny nails; on July 1 he submitted a requisition for 15-20 gallons of linseed oil and 100 pounds of ‘Spanish White’ [a chalk-like white powder pigment] to make putty for the windows, to fill cracks, and to paint the armory (but apparently only was able to secure 49 lbs. of nails, 2 gallons of linseed oil, and one box of window putty); and on September 19 Allen submitted the final bill for armory construction to pay for the supervising carpenter’s labor. While no doubt nearly every frontier soldier would have been able to build a rough and ready log structure, the doors, windows, fitted sashes, tongues and grooves, etc. required additional skill sets.

Based on letters and receipts in the Cantonment quartermaster correspondence files, construction of the officers’ quarters seems to have been turned to next, as on December 19, 1811, Bissell submitted a bill for 200 pounds of 6-penny nails for fastening shingles and inside work on the officers’ quarters. At the same time, he requested reimbursement for two pairs of oxen which were being utilized to haul the logs up from the Missouri River to the Cantonment construction on the bluff. As with the first iteration of the Cantonment in 1805, the huts for the troops were apparently the last item of planned construction activity. Finally on April 14 and June 9, 1812, bills were submitted for 32 lbs. of 6-penny nails and 31 lbs. of 8-penny nails for the construction of the housing for the troops.

The orders for the construction of the second iteration indicated that the Cantonment was to be built to provide housing for four companies of soldiers. In terms of later ideas regarding
the personnel size at the Cantonment, one important question with slightly different answers is: how many men would four companies of troops entail? After the War of Independence, Congress had decided only a peacetime army was required, and in line with cutting back the size of the army, the official strength of an army company in 1805 was reduced to 1 captain, 2 lieutenants, 1 ensign, 4 sergeants, 4 corporals, 4 musicians (buglers and drummers), and 68 privates, or 84 men (Urwin 1988:40). Four companies of 84 men would mean that the Cantonment needed to be built to house at least 336 men based on 1805 army regulations. During the War of 1812, the strength of a company was upgraded by about 25%, now with a company level set at 1 captain, 2 lieutenants, 1 ensign, 4 sergeants, 6 corporals, 2 musicians, and 90 privates, or 106 men (Urwin 1988:42), so four companies would have been 424 men. However the second iteration of Cantonment Belle Fontaine was essentially completed before this upgrade in company size was sent out, so the barrack housing may not have been constructed to house this larger number. Then in 1815, after the War of 1812 was over, Congress once again decided on a smaller peacetime army, and infantry companies were comparably downsized. Thus, for instance, the 1st, 5th, 17th, 19th and 28th infantry regiments from the War of 1812 were collapsed into a new 3rd regiment, and the old 2nd, 3rd, 7th, and 44th infantry regiments were collapsed into a new 1st regiment, and so on (Urwin 1988:49).

Troops from four infantry companies were still being housed or assigned to the Cantonment through 1826 when these units were moved from Cantonment Belle Fontaine to Jefferson Barracks Military Post in St. Louis. Thus the Cantonment, during most of the 17 years (1810-1826) that it was in maximum use, seems to have been continually manned by four companies at a minimum, which in theory means it could have been staffed by and required housing for 336 to 424 men, if the four companies in residence were at fully authorized strength, which they usually were not. For example, at the beginning of the War of 1812, the four companies at Fort Belle Fontaine were listed as having only a total of 134 men (McDermott 1967:113). And after the war, in 1817, a later analysis by Judge Walter B. Douglas (in his position as President of the Missouri Historical Society) estimated that the Cantonment contingent had been cut back again to basically pre-war levels, to a total of 159 men (Judge Douglas estimate from the Fort Belle Fontaine papers, Missouri Historical Society Library, St. Louis). However these data all reconfirm the construction in 1812 of adequate housing for four companies of troops at the Cantonment.

Significantly, in terms of the fort configuration, in order to finally create an enclosed stockade-like space, part way through mid-summer of 1812 Bissell had his men hastily finish “closing the vacancies [between the backsides of the one-story buildings] with pickets”, thus at least giving the Cantonment the appearance of an enclosed fortification, in preparation for expected conflicts in the War of 1812. Quartermaster receipts show that on June 30, 1812, just two weeks after President James Madison had declared war with Great Britain on June 12, 1812, the final hardware purchase for the construction of the new Cantonment was made, consisting of the buying of apparently all the stock of nails from the principal St. Louis hardware merchant, listed as being required to finish what was identified as “fortification and armory”. The receipt for these nails simply listed them at a cost of $19.93 ¾. The 1812 price in St. Louis for 6-penny nails per pound was $0.37 ½, and for 8-penny nails $0.25. Hence if these two nail sizes were the ones secured, as being the sizes most typically utilized in earlier Cantonment construction, this purchase would have been between 55 to 80 lbs. of nails, one of the larger nail purchases for the Cantonment. These use of these nails specifically for ‘fortification’ seems most likely related to the hurried creation of the ‘picket’ defensive features.

In preparation for the hoped-for expanded duties and functions for rebuilt Belle Fontaine, Charles Gratoit of the Army Engineers had drawn up a “Plan and Elevation of Encampment
Belle Fontaine” in the spring of 1812 to inform the War Department of the Cantonment’s expected new configuration and facilities when it was completed later that year (McDermott 1967: opposite page 114, and Fig. 3 here). Gratoit’s idealized plan showed proposed construction of a main administration building, a powder magazine/arsenal, a blacksmith shop, a quartermaster’s store, various storage structures, officers’ and enlisted men’s quarters, two blockhouses on the Southeast and Southwest corners, three gates, and two wells, all in a roughly rectangular-shaped lay-out around a central parade ground.

The two proposed block-houses, being on the south side, would then have provided security for the back of the Cantonment and the area looking toward St. Louis. I was somewhat surprised at this location as I would have assumed the blockhouses instead would have been situated on the north side to overlook and control the river. These were the last structures to be constructed, built two stories high and each armed with a swivel wall gun termed a six pounder. This swivel wall gun was like a small cannon, with a barrel usually less than a meter or three feet in length and a barrel bore of perhaps 3.5 cm or 1 ½ inches, mounted on a swivel stand which gave it a very wide arc of fire coverage. Its designated ammunition frequently was six one-pound iron grape-shot balls in a cloth sack for easy loading, hence the name ‘six-pounder’.

Colonel Bissell reported to the War Department on September 26, 1812, that the two-year project of new Cantonment construction was finished, that the soldiers had completed construction of the arsenal, the officers’ quarters, storage buildings, and all other one-story structures for housing the troops (Correspondence File Records). Notably McDermott (1967:112) says that the language of Colonel Bissell’s report to War Department headquarters made it clear that what was actually built was not quite like what had been originally proposed and as well not as elaborate as the idealized plan drawn by Gratoit and sent to the Army in the early spring of 1812 before the construction was completed. However Bissell did not explicitly state what variances had occurred.

The statement that Bissell made in that September report about “closing the vacancies with pickets, which gives the Cantonment the appearance of a Fortification” (as cited in McDermott 1967:112) gave me some pause, as earlier commentators had assumed that the fort must of course have had a more massive separate vertical log stockade (as typical in Hollywood movies, and as perhaps as Gratoit’s idealized plan may indicate was proposed). However the actual ‘stockade’ built in 1812 as documented by Bissell’s report, hastily erected a couple weeks after the War of 1812 had been declared as noted above, rather consisted only of the horizontal logs of the back walls of the one-story log-cabin-like storage facilities and the one-story troop living quarters, with some sort of hurriedly thrown-up wooden ‘pickets’ closing the gaps left between the back walls of these buildings. ‘Pickets’ as discussed in army fort construction at this time, referred to the same kind of construction as today, vertical boards or stakes in wooden fences (picket fences). Thus the ‘stockade’ or ‘fortification’ at Belle Fontaine was not at all like what the word might conjecture. Among other issues, such impermanent materials meant that recovering any evidence of the complete footprint of the Cantonment by archaeological excavations two centuries later would be at best very difficult.

Two construction problems related to this second version of the Cantonment were continually mentioned in communications from various military officers to the War Department. The first issue was the difficulty in securing necessary building supplies – numerous written requests for adequate funds to obtain nails, tools and hardware went unanswered from Washington. This no doubt contributed to the fact that in shingles were still not nailed down in the early periods on the troop quarters and some other buildings but just held in place by exterior wood planks or logs laid horizontally over the roof to hold them down. The second issue was a troop morale problem, defined by unrest due to health issues, lack of military activities, and hard
physical construction labor. Certainly for the first encampment down along the river banks, the situation had been very unhealthy. Many of the troops stationed there succumbed to diseases the first few years, such as dysentery, malaria, St. Louis encephalitis, and so on. With the troop huts being the last major fort component built at the new Cantonment only in the first half of 1812, the enlisted men had perhaps still been housed down on the less healthy levee location until that date. Another factor for troopers’ unrest before 1812 was the lack of military activities due to the fact that the Cantonment head been essentially by-passed. Military action related to the Indians and the traders had rapidly moved upriver from the quickly settled St. Louis region to what is now western Missouri, Kansas, and Iowa, and soon after to Nebraska and the Dakotas, leaving little in the way of military functions for Belle Fontaine. And lastly, the Cantonment construction in its second version had been very labor-intensive for two years, with construction labor of course being extracted from the troops, not perhaps what they had expected when they enlisted in the Army.

These poor living conditions and morale problems led to an increase in the number of cases of trooper desertions, particularly in the period between 1810 and 1812, if the sudden number of reimbursements for issues relating to tracking down and securing deserters in the quartermaster correspondence documents are to be trusted as an accurate representation of desertion frequency. During this period, a significant financial draw at the post on their limited petty cash or contingency fund was the cost of paying to have deserters found and returned. In the documents in the Correspondence File Records for 1810, payment was made for tracking down deserters to both officers, and to outside agents (who were much like bail bounty hunters today). To the outside agents, the fort paid one agent $13 on June 10; paid to five agents $15, $15, $5, $5.12 ½ and $12.12 ½ on July 9; paid $22.75 on July 23; paid $15 on August 3; and in early September paid $4.50, $10, and $2.26. In 1811, in the midst of construction there was only one reimbursement – Captain Simon Owens of the First Infantry Company turned in an itemized list of meal expenses of $66.87 ½ for his prolonged search for two deserters during the period of August 18 to September 1. These two annual sets of expenses related to deserters were not much by todays’ economic standards, but seemingly a major draw on the contingency fund available to the 1810 and 1811 staff. For the following year in 1812, the reimbursements related to finding deserters were paid just to support staff listed as Corporals and Sergeants. These reimbursements were made only in the spring before the construction was finished, and reimbursements were much less costly, being $2.50 on February 23, $1 on February 28, $2.50 on March 2, $1 on March 3, and $6.50 on March 17 (Data from Correspondence File Records).

Reports of deserters essentially disappeared from the quartermaster correspondence after early 1812. On one hand, one might wonder if desertion was no longer a problem once the War of 1812 was in full swing; or perhaps less of a problem when the new better troop living quarters of the second iteration Cantonment were finished that year; or perhaps expenses for chasing deserters were listed elsewhere in later years, as 1812 was the last time in this set of quartermaster correspondence files that payments to recover deserters were mentioned. But on the other hand, on June 11, 1818, Capt. J. S. McIntosh of the Rifle Regiment posted a flyer listing a reward of $10 each plus “all reasonable expenses” for the capture and return to Cantonment Belle Fontaine of three deserters who went AWOL on May 14 and May 24, so clearly desertion remained an issue (Anonymous internet posting, ‘The Missouri Crisis at 200’, which contained a copy of that flyer).

The troops of the 1st U.S. Infantry and the Regiment of Artillerists moved uphill from the earlier river-bank Cantonment location and were the first unit residents of the second bluff-top fort, which they had mainly constructed. Some of the first reports of the manning of the second Cantonment related to the preparations for battling potential War of 1812 Indian and even British
hostile forces. Military documents indicate that at the end of construction in 1812 that only 134 men and officers were resident at the second Cantonment fort, although there was additional housing. Bissell remained in charge through the early part of War of 1812, when he was then promoted from Colonel to General and re-assigned defense of much of the Great Lakes area.

With the construction of a larger new facility, one might have expected that the troops were now better provisioned by the War Department than before, but this does not seem to have been the case. When Eli B. Clemson (the same Lt. Clemson who had come in 1805, but now a Lt. Colonel) took over as Assistant Commissary of Issuances in 1816, he wrote back to Washington D.C. that he was very distressed with the “wretched state of the Store Houses” at Belle Fontaine, which he said were short of space, exposed articles to the weather, rendering it basically impossible to leave anything in them overnight not in sealed cases and boxes. As one of his first duties, he also sent a detailed list for necessary new supplies to Army headquarters in 1816, requisitioning coats, sashes, knots, belts, and swords for sergeants, private coats and uniforms, ‘great’ coats, flannel shirts and summer shirts, privates’ linens and underwear, woolen pants, socks, boots, moccasins, mittens, hats, blankets, knapsacks, haversacks, drums, fifes, bugles, rifles (only the new kind he said), shot bags, powder horns, cartridge boxes, ball screws, worms, ricks and brushes (to clean rifles), bayonets, regular tents and wall tents, tent poles for both kinds of tents, flags, kettles, and tin pans. He did not receive anything that year so the next year he resubmitted the request, saying that these materials were urgently need for the Rifle Regiments for the next 2 ½ years, and also sent notice to the Army that a new Storeroom had been built in 1817 so he would be able to properly house the uniform supplies when they arrived. Repeated requests to fill this order and complaints for failure to receive anything were sent to Washington D.C. again later in 1818, and still again in 1819 from the Cantonment staff officers, and finally Brigadier General Daniel Bissell himself stepped in, reaffirming the urgent need for these supplies, with an added reference to the suffering of the troops due to lack of proper clothing (see Quartermaster Correspondence Files for documentation).

Apparently other forts had higher priority and Belle Fontaine languished. As noted above, the fort had been essentially by-passed in its original primary mission of controlling river traffic trade and dealing with the Indians almost as soon as it was built, by new better situated and staffed forts established in 1808 further up the Missouri and Mississippi Rivers. In addition, because of its location, it was very difficult to provision during the winter months. River ice (no longer a problem today because of global warming) made water transport of supplies over the 24 river miles distance from St. Louis hazardous to impossible during several months, and proper roads had not yet been built, so that the rutted muddy trails of 15 overland miles between St. Louis and the fort also were often impassable during winter months. And in summer months, or periods of low water, the fort was equally inaccessible from the river except by ferrying supplies in small boats (details from Billon 1888, Scharf' 1883). By a decade after it had been built, post commanders were beginning to complain not only was the second iteration of the Cantonment inconvenient for a military depot, but the log buildings, laid directly on the ground, had begun to decay badly and needed replacement. The post commanders suggested that a move to a new locale would be the best solution.

Thus in 1825, the U. S. House Committee of Military Affairs visited Belle Fontaine to assess the military’s request for funding for a new facility. Their 1826 report observed that “The log buildings at Belle Fontaine have become so much decayed that a part of them have recently fallen down, and the remainder are so rotten that they can be kept up but little longer. There is a considerable quantity of arms and other military stores now at Belle Fontaine, which are so insecurely sheltered in these log buildings” that they are of risk (cited in McGuire 2001:17).
Hence in May of 1826, the House authorized construction of a new arsenal in St. Louis adjacent to Jefferson Barracks.

These were some of a number of factors resulting in Jefferson Barracks Military Post being built south of St. Louis city in the Carondelet area, and the official decommissioning of Fort Belle Fontaine as of July 10, 1826, with the removal of the Cantonment forces to the newly completed Jefferson Barracks. The list of troops moving from Fort Belle Fontaine to Jefferson Barracks on this date were four companies (Companies A, B, H and I) of the 1st U.S. Infantry. There was a small contingent of troops left at the fort until 1828, when the first part of St. Louis Arsenal (built near to Jefferson Barracks) was completed, and munitions from Fort Belle Fontaine arsenal were officially transferred there. Some sources suggest that not all of the weaponry was moved out of the Fort Belle Fontaine arsenal until as late as 1834. In 1836, the ex-Cantonment facility and land was then sold by the government to a group of speculators who hoped to lay out a town, the first version of later settlements developed in this area.

Cantonment Belle Fontaine: history after decommissioning

As just noted, after the last of the arsenal materiel stored at Fort Belle Fontaine were removed by the army to Jefferson Barracks, the property was determined to be surplus and was sold in 1836 to a group of four local investors – Horatio Nelson Davis, Elias T. Langham, Jamison Samuel, and Dunham Spalding. This group subdivided the land into potential home lots for a new town they expected to christen Belle Fontaine. However, the town development failed, and in 1844 the land was sold at sheriff’s auction for back-taxes to Russell Prentiss. After Prentiss’s death in 1851, the trustees of his estate then sold his holdings. According to the discussion on the 1988 St. Louis County Parks Historic Inventory forms (Hamilton 1988a, 1988b), apparently repeated on their National Register of Historic Place nomination form for Fort Belle Fontaine archaeological site in February 2016, after several property sales, in 1853 Isaac T. Greene had purchased most of the land grant property. According to Hamilton (1988a,1988b), Greene’s ownership and control was complicated. By 1859 (if not earlier), Justin Franklin Weston and William Clark had managed to secure most of Greene’s 800 plus acres of Land Grant #1909 including the old fort property. Weston ultimately obtained it all. Then in 1872, Weston and his wife sold their holdings to Dr. David C. Tandy, who was retiring from his medical work career in St. Louis city.

Was the Cantonment land farmed by small holders or tenant farmers during the 1836 to 1872 period, or was the land ownership just rolled over by land speculators? The answer is not clear. Parcels of Survey #1909 were farmed as shown on various 19th century county land atlases, but it is not evident what land use was made of the old Cantonment area itself. We do know that David Tandy farmed the Cantonment area property for a few years after his purchase in 1872 until he died in 1875. His death notice indicated that his estate was being left to his widow and three’ teenage’ sons (although the oldest boy was also identified as being almost 21 years old). The real estate inventory of the will listed the “Belle Fontaine farm” as having a small house, a large barn, an 8-acre orchard, and 75 acres under cultivation. Tandy’s oldest son, Robert E. Tandy, inherited the house, barn and land, and continued farming the property.

There are some later references to the Tandy farm. A story in the Republican newspaper from Illinois dated January 2, 1895 reported that Robert Tandy’s house was near the center of the old Cantonment (see note below). It further erroneously suggested that a portion of the Tandy residence was part of the old officers’ quarters. Note that St. Louis County Parks form (Hamilton 1988a) discussing the north half of this house as well as the 1904 newspaper story (Anonymous 1904) on moving the Belle Fontaine Cemetery burials both erroneously labelled
this north half of the Tandy House (Fig. 5) as part of the fort, calling it the Cantonment Powder House, which it also is not.

(The 1895 Republican news story above was cited by student Robert Wilson on page 23 of his January 7, 1982, internal project report “History of Fort Bellefontaine”, prepared for the Department of Anthropology and Sociology, University of Missouri – St. Louis, describing his initial survey and the preparation of the first archaeological site report form for the Cantonment location for the Archaeological Survey of Missouri. Wilson did not include a complete citation, but just excerpted it. As yet, I have not been able to relocate this newspaper story. Because I was shown Wilson’s internal report unofficially, I have not included it in the references, because I don’t know if it is available for public access.)

There was also a two-story structure of late 19th century sawmill-cut log construction style that was alleged to have been part of Cantonment Belle Fontaine, illustrated (Fig. 6) in a 1904 newspaper report (Anonymous 1904:1). If it was on Cantonment property then, it has since been destroyed. If the newspaper reference correctly listed it as Cantonment-area related, it likely did ultimately belong to the Tandy family.

After two decades, in 1896 Robert Tandy and his wife Orie sold their Cantonment area farm property to another farmer and his wife, Samuel H. and Grace A. Leathe. The Tandy/Leathe house (Figs. 4 and 5) during that period is apparently the one illustrated by Lindenbush (1979:27). The Leathe family sold their land (including anything that remained of the Cantonment site) to a St. Louis city development firm in 1910, and the City of St. Louis then acquired the property in 1912 for the new location for the City’s boys reform school. This reform school had been established in 1853 as the St. Louis Work House, but its name was quickly changed to the St. Louis House of Refuge and Corrections from 1855 to 1905, and then the St. Louis Industrial School from 1905 to 1926. With the purchase of the old Cantonment area and adjacent land in 1912, the City began construction of a rural detention facility in 1914, to move the Industrial School from the City to the old Cantonment Belle Fontaine area. When the construction was completed in 1920, the reform school facility was fully transferred from the City to this County site. (Remember that St. Louis City is one of only three large cities in the U.S. which is not in a county.)

The new facility housed delinquent boys from 9 to 16 years of age, with boys older than 16 being sent to a state facility at Booneville. (Girls went to another facility). The new reform school was designed as “a controlled environment remote from the city and with a variety of service activities which authorities said were specifically designed to prepare the boy for his return to the community” (Jonquet 1938:17). The school changed its name to the Bellefontaine Farm for Delinquent Boys in 1926, and it kept that name until the City sold the property to the Division of Youth Services of the State of Missouri [sources conflict on the exact date, apparently in 1986], which changed the name to Missouri Hills Farm and later the Missouri Hills Youth Center or Missouri Hills Detention Center, run under contract by a private firm for the state. St. Louis County Parks acquired the property surrounding the Missouri Hills Home in 1986 for a future park. The State of Missouri reached an agreement with St. Louis County Parks in 1986 to have the County include both the portion of the land owned by the County and the portion of the land owned by the State incorporated into one park, the 305-acre Fort Belle Fontaine County Park, to be managed by the County.

The current site reflects much of the early 20th century construction. The original reform school center had nine two-story cottage-style buildings of red brick, with large front porches, and with each floor containing 12-15 beds or a total of 24-30 beds per cottage. Buildings also had instruction areas where the boys learned auto mechanics, brick-laying, cabinet making, carpentry, sheet-metal work, shoemaking, and tailoring. The facility was partly self-supporting in
the 1920s and 1930s with a cow barn with calf and bull sheds, a milk house, a hay barn, a feed barn, a horse barn, poultry houses, and three green houses, and with more cottages planned in future years (Jonquet 1938:34-37).

The City applied for and received assistance to improve the site from the federal Works Progress Administration (WPA) during the ‘Great Depression’ of the 1930s. Under WPA work, the property improvement included site grading and contouring, in the process levelling out part of the old Cantonment area. The Cantonment area itself was landscaped, with some sources suggesting that in conjunction with the grading, this was part of deliberate burying or removing any remaining evidence of the fort. Two dormitories and a residence for the Boys Home director (directly within the old fort area), a gazebo, greenhouse, and a large limestone staircase were additionally built by WPA workers in the period from 1936 to 1940. To provide better access, a loop roadway was laid out on the bluff by the WPA around the re-landscaped Boys Home area (see Figs. 2 and 9). The portion of the roadway impacting the old Cantonment site is essentially along the bluff edge. Various utility lines were lain underground both along the roadway and directly across the Cantonment area to the new buildings constructed there, also disrupting subsurface deposits.

A firm of three Italian architects was hired to design the very elaborate limestone masonry terrace structures, stairways and fountains, the so-called Grand Staircase, begun in 1938, which is more or less directly in front of the old Cantonment Belle Fontaine site itself, leading down the bluff slope to the river. The stairway is in large part a series of stairs interspersed with (now defunct) fountains and reflecting pools, with some other interspersed structures, because it was expected that their ‘eloquence’ would help attract visitors to a planned future recreational area to be developed on the river banks below the Boy’s Home (Jonquet 1938, Hamilton 1988b). The Grand Staircase constructions were rebuilt, rehabbed, shored up and stabilized in 2011, reportedly using an additional approximately 736 tons of rock. Readers should refer to the websites of the Fort Bellefontaine County Park and the NRHP listings to see various recent photos of the current Grand Staircase features.

Note that as of the date of writing this report, the NRHP listing for Cantonment Belle Fontaine unfortunately illustrates one of the rebbed Grand Staircase structures and mis-identifies it as being part of the 1810 Cantonment. The 1930s Staircase and the three architects who designed it may well deserve their own NRHP listing, but this staircase complex was built 125 years after Cantonment Belle Fontaine, situated north of the Cantonment, and never was part of it. It should not be included with the historic Cantonment listing. Similarly the large cannon now at the top of the Grand Staircase is not from the Cantonment, but is a 20th century addition.

On August 11, 2005, the Missouri Department of Natural Resources certified the area containing the old 1810 Cantonment and the 1930s staircase as a Lewis and Clark Natural Heritage Site, one of ten in the state. The Cantonment site location was entered onto the National Register of Historic Places as of February 23, 2016, although as indicated the listing contains some errors.

**Archaeological Investigations and Analyses**

(a) **Archaeological Investigations**

This first part of this section explains the history of archaeological work at the site, and the reasons why the standard excavation context correlations and interpretations are not available so that the artifacts recovered through excavation have been forced to be treated as simply being derived from a multi-season surface collection. The second part of this section summarizes the
results of a number of site and artifact analyses from the five seasons of archaeological test excavations at Encampment/Cantonment Belle Fontaine.

The first professional archaeological explorations, focusing mainly on the north side of the old Cantonment, were supervised in field schools directed by Joe Harl from 1992 to 1994 and by Jim Railey from 1996 to 1997. To understand the complexity of the following account, it may be helpful to read this entire section from pp.17 to 25 before trying to follow the nuances, as at times I switch back and forth between archaeological interpretation and procedures of Harl or Railey, which might be confusing without understanding all of the context.

Field associate Joe Harl, then working for the Archæological Research Center of the University of Missouri - St. Louis (UMSL), began the first archæological test excavation at the second Cantonment location. This exploration was engendered through the impetus of Ron Brunnert, who was then president of the Fort Belle Fontaine Historical Society. The Fort Belle Fontaine Historical Society had lobbied for recognition of the importance of this historic resource, and Brunnert was encouraged by the fact the St. Louis County Parks system had secured access to the property in 1986 land deals and had plans to turn the Cantonment site into an educational part of a new county park. Because of this County Park involvement, Brunnert approached the UMSL Archæological Research Center (now defunct) to see if they would be willing to conduct some archæological work at the site, with hopes that the County Park system thus might engage in some actual reconstruction of the Cantonment for visitors, based on the results of the archæological investigations. Harl was assigned by the UMSL Archæological Research Center to take on this task. He ended up supervising three separate three-week July archæological field mini-sessions in 1992, 1993, and 1994, directing excavation work of community volunteers from the Fort Belle Fontaine Historical Society plus some high school students in an UMSL summer program.

Ron Brunnert provided these volunteers with several of his ideas on the construction of the Cantonment, which he expected they would document in their excavations. Brunnert suggested that the northern side of the Cantonment had been dominated by a massive two-story administration building and officers’ quarters and associated support structures, that the western side of the Cantonment consisted mainly of more officers’ quarters; that the eastern side of the Cantonment consisted of the arsenal and warehouses for the storage of supplies, and that the southern side of the Cantonment consisted of 16 huts for enlisted men, each hut containing housing for eight men, for a total of 128 troops (Harl 1995:6). Unfortunately it was not at all clear how and where Ron Brunnert came by his ideas, whether they were all just his speculations or elsewise. As one of a number of examples of conflict between his proposed reconstructions and historical data, the report by Col. Bissell to War Department headquarters in Washington D.C. in 1812 stated that the fort construction had been completed with facilities to house four companies (a company then composed of 84 men), or hence the Cantonment was built to provide housing for a total of at least 336 men, a number which does not square at all with Brunnert’s suggestion that the fort only had facilities to house 128 men (excluding officers). Other examples are equally at odds.

Joe Harl had started by laying out test units trying to verify Brunnert’s scenario of what he thought Fort Belle Fontaine looked like. Hence Harl’s volunteers early on explored the area around a limestone building remnant which Brunnert thought had been part of the Cantonment. While some armchair scholars in other publications had also erroneously identified this structure as part of the Cantonment, my recent photo re-investigations allow us to clearly indicate it was actually part of the Tandy’s farmhouse (Figs. 4 and 5), substantiating the archæological evidence summarized below by Harl and Railey. Among the earlier guesses (which have proven wrong), the structure had been identified as a building which might have been a blockhouse or
the powder house or even part of the officers’ quarters of the 1810-1812 fort construction. If this limestone building had in fact been a part of the original Cantonment, then other fort features should be along the same axis along the bluff, and this would influence the location of archaeological test exploration for these fort features. However, Harl’s initial testing indicated that this building remnant was likely only constructed by the Tandy family (or perhaps other earlier 19th century farmers) from recycled or salvaged materials from the Cantonment and was not part of the original fort (Harl 1995:16). Based on the identification of the location of the root cellar feature found in subsequent archaeological excavations further east (see discussion below) as having been constructed under the west wing of the administration building, Harl indicated that this above-ground limestone-footed building remnant would have been near but beyond the presumed northwest corner of the Cantonment, thus west and outside of the Cantonment boundaries, and hence only the farmhouse in which the later 19th century farm families such as the Tandys and Leathes had lived. Later more expansive explorations by Railey in 1996 (and apparently also in 1997), including excavations completely around this structure, more firmly demonstrated as correct the preliminary suggestion by Harl that this late 19th century house instead was at most built from limestone and timbers salvaged from the old Cantonment, but it had not been an original part of the Cantonment. And as indicated above, subsequent photo analysis definitively shows it to be the north half of the late 19th century Tandy/Leathe farmhouse, confirming an idea also suggested by Esley Hamilton (Hamilton 1988a).

Harl had focused a significant part of his exploration testing on finding the administrative structure which had been on the north side of the Cantonment, so it turned out that he was fortunate because part of the original surface of this locale had been preserved in spite of the WPA site contouring work (see basis of this evidence in Railey’s work below). In the process of their explorations of the north side Cantonment area, Harl’s volunteers had come upon a back-filled deep root- or storm-cellar just east of the former Missouri Farms (later Division of Youth Services) Administrative Director’s house which had been built by the WPA in the late 1930s (Harl 1995:21). This find initially confused the volunteers, as a root cellar did not occur in the idealized reconstruction of the fort that Ron Brunnert had created. Doing further exploration of the limestone-walled cellar feature, with deep testing and exposure by Harl’s crews, and the final clean-out later by Railey’s crews, excavation work demonstrated that it was most likely essentially a root cellar, apparently built under the west wing of the Cantonment administrative building. When completely excavated, the cellar measured about 18 feet N-S by 16 ½ feet E-W on the exterior, and 15 ½ feet N-S by 14 feet E-W on the interior and was roughly 6 feet deep. It was entered by a limestone-lined ramp in the northeast corner of the north side, a ramp about 12 feet long and 3 ½ feet wide on interior measurements (Fig. 7).

From this cellar, Harl’s crews recovered 1810-1826 period military uniform buttons from infantry and riflemen and light artillery units, lead shot, French and English gun flints, various much shattered cream-ware ceramic fragments (averages size less than a U.S. quarter), a ceramic ink well, a brass bell, and broken dark olive-green bottle fragments in the fill. In addition this was a major locale where significant numbers of zooarchaeological specimens were recovered, including cattle, hog, turkey, and goose bones. Unfortunately, being a handy empty pit after abandonment and destruction of the Cantonment buildings, later 19th century residents (field crews surmised the Tandys) also used the pit for refuse disposal, before it was covered over by 20th century dirt fill, apparently by the 1930s WPA grading. Thus in addition to the 1810-1826 period artifacts, there was later 19th and 20th century historic refuse debris mixed in the cellar fill as well.

When the plans of the expected final layout of the second iteration of the Cantonment were sent to the Army headquarters in Washington D.C. in early 1812, that submission also
included information of the measurement of the angle and distance from the new Cantonment administrative building to the Belle Fontaine spring outlet on the Missouri River, as a means of more precisely characterizing the location of the new construction. As noted elsewhere in this report, subsequent river erosion has removed the 1805-1812 period levee and shore-line area along the Missouri River, so that 1805-1812 spring outlet to the river no longer exists as such. Harl had suggested using this 1812 angle and distance information to verify the location of the cellar as being under the administration building, but river levels were too high to relocate any remnant evidence of the outlet. But during the 1997 school year, one of Jim Railey’s graduate student colleagues noted in the local press a story about portions of steamboat wrecks re-appearing above water levels in the Missouri River at nearby St. Charles, which meant that the river was at a fairly infrequent low stage. Because Railey was not available, this colleague went to Belle Fontaine for Railey and found exposed evidence at the low river level of the erosional location in the bedrock where the spring stream had once entered the river. Assuming this erosional evidence also marked the location of the Belle Fontaine spring outlet in the 1812 report, computation of the angle and distance information using this evidence of the spring outlet indicated that the root cellar would have been located under the presumed west wing of the administration building of the Cantonment.

Following up their parsing of the cellar’s dimensions and orientation, Harl’s volunteers over-eagerly thought that they also had found soil discolorations left from building wall trenches in line with the back (south) wall of the cellar in the test cuts that Harl had laid out, that they thus had found what Brunnert had told them they would find, and these ‘findings’ were included in Harl’s 1995 report as evidence of ‘Structure 2’, which he hoped would prove to be part of the administrative building. But as explained in more detail below, Railey found in subsequent excavations in 1996 in attempting to find and follow the alleged soil discoloration wall trench evidence, that the original Cantonment soil surface, which had been buried by WPA activities in the late 1930s, rather had been mis-identified as disturbance discoloration from possible wall trench excavations, and hence these soil discolorations were not evidence of any man-made wall trenches after all.

Work was disrupted after Harl’s third season because the institutional decision had been made to close the UMSL Archaeological Research Center, effectively ending their archaeological excavations and involvement at Fort Belle Fontaine. But at the urging of Ron Brunnert, the UMSL Sociology and Anthropology Department Chairman Van A. Reidhead sought to find another way to continue some site explorations. Reidhead contacted a number of potentially interested parties in the St. Louis area, the result of which was that a provisional ‘Fort Belle Fontaine Archaeology Partnership’ advisory group was formed in 1996 to help follow up on the Archaeological Research Center work of 1992, 1993, and 1994. The short-lived Fort Belle Fontaine Archaeological Partnership advisory group consisted of the following representatives that Reidhead convened:

-University of Missouri-St. Louis: Van A. Reidhead, Department of Sociology and Anthropology (group chairman)
-Washington University in St. Louis: David L. Browman, Department of Anthropology
-St. Louis Community College at Meramec: Douglas R Givens, Department of Sociology and Anthropology
-Fort Belle Fontaine Historical Society: Ronald A. Brunnert, Sr., President
-Missouri Historical Society: Karen M. Goering, Vice-President
-St. Louis County Parks Department, Historic Section. Esley I. Hamilton was invited, but I think perhaps someone else from the Parks Department came.
Van Reidhead told the group that at least two UMSL summer school excavation classes of six-weeks were planned in 1996 and 1997, with support from funds that Reidhead had secured through his department and the University of Missouri system.

Because the Missouri Division of Youth Services had been unhappy with the partially backfilled trench and root-cellar excavations left after the earlier explorations in 1992, 1993 and 1994, Ron Brunnert arranged for his colleague Jim Meiners to provide a backhoe to completely backfill any archaeological excavations at the end of the 1996 and 1997 seasons. The new field crews were to be composed only of college students who enrolled and would be trained in the UMSL 1996 or 1997 Summer School excavation classes, instead of volunteers. With the Archaeological Research Center at UMSL being closed in 1994, Joe Harl and his colleagues who had been let go from the UMSL research center had continued on in contract archaeology, establishing the Archaeological Research Center of St. Louis, Inc. in the nearby suburb of Overland. Harl thus was no longer available to continue supervising further operations at Belle Fontaine for UMSL since he had work obligations at this new firm. Because the UMSL department had no graduate program, and Reidhead had other research interests and commitments and thus could not supervise the excavations, the advisory group suggested that Reidhead advertise for field crew supervisor applicants among the archaeology graduate students at Washington University, and other region graduate programs. Reidhead then interviewed applicants for the field supervisor position and told the advisory group that he had found a first-rate candidate. To supervise the 1996 field school excavation work, he had hired Jim Railey, who had an M.A. in archaeology, had multiple seasons of prehistoric archaeological work along the Ohio River, and who was just completing his Ph.D. under the guidance of WUSTL professor Patty Jo Watson based on his archaeological explorations of a Chinese Neolithic site.

Railey in the 1996 season had his crew relocate the main building root cellar and also had them attempt to use the cellar wall parameters to relocate and more completely define the so-called ‘Structure 2’ building wall trenches that Harl’s volunteers thought they had identified in their earlier work. Unable to locate Harl’s previous metric grid datum point, Railey set up a new permanent datum, labeled N795 E500, consisting of a wooden stake with a nail driven at the grid point which was placed at the base of the west wall of the former Administrator’s brick house next to the root cellar (Railey 1966:2). Although unspecified, the grid appeared to be oriented with magnetic north being grid north; distances were in the metric system, although I have tried to remember to convert any measurements to English units of feet in this report, as that would have been the system that the troops at Belle Fontaine utilized.

One of the issues that confounded the archaeological field work was the WPA project work in the late 1930s. This had involved the WPA levelling, contouring, and preparing the Boys’ Home acreage for new construction, before the WPA crews then built the three new buildings on the eastern side of the property and also constructed the new loop road around the property, all significant disturbances which adversely impacted the old Cantonment area (see Figs. 2 & 9).

None of the work in the five seasons turned up any solid evidence of the Cantonment except on its north side. Joe Harl’s crews had found some soil discoloration features on the north side of the Cantonment, just east of the storm or root cellar excavations, which based on Brunnert’s reconstruction drawing of the proposed plan sent in to the Army Headquarters in 1812 (see Fig. 3), Harl thought thus might be part of Cantonment administrative building wall trenches, going so far as calling them footings of ‘Structure 2‘. Jim Railey in follow-up work then attempted to have his crews confirm these findings in part in order to also use them to map out distances to try to locate the south, east and west sides of the Cantonment complex.
However Railey’s later series of test cuts in possible southern Cantonment building areas in 1996 (and also apparently in 1997) showed the levelling of the site by the WPA had apparently stripped off the evidence of the southern portion of the 1810-1826 occupation down to the subsoil. Further test excavations showed that WPA grading had pushed mixed topsoil and subsoil over the intact Cantonment period topsoil or ‘Horizon A Zone’ still extant near the bluff edge on the north, and also pushed soil to the edge of the Boys’ Home property on the east (this resulted in an about two foot drop in elevation from the Boys Home property level to the adjacent St. Louis County Parks level). The bluff top on which the Cantonment site had been built originally had a very slight uphill slope from edge of the river overlook, with the southern side of the bluff site location originally a bit higher than the northern side. Thus Railey concluded that during the WPA work in the late 1930s re-contouring and levelling the Boys Home ground, the southern side of the fort footprint had been graded away while grading down the area to create a more horizontally level ground level for the Boys Home new buildings and landscaping, with some mixed fill pushed north and east. Railey was explicit that his 1996 explorations revealed that not only had some of the current fill on the northern side of the site thus derived from this levelling work, but hence this WPA work fortuitously preserved a bit of the original Cantonment ground surface on the northern side of the site by having this overfill graded on top of it.

In the reopening, cleaning out, and expanding the test cuts that Harl’s volunteers had excavated, particularly focusing on what Harl (1995:22) had identified as ‘Structure 2’ which Harl thought was in E-W alignment with the south wall of the root cellar and thus part of the 1812-1826 administration building, Railey reported that the building wall trench soil anomalies that Harl’s crews reported finding turned out to be not structural evidence but were actually old Horizon A deposits, not a wall trench as Harl had suggested. Railey (1996:4) wrote “upon excavation, however, this stain proved not to be a trench at all, but rather an original humus layer covered by a lens of re-deposited subsoil beneath the road and adjacent parking lot.”

When I asked Railey to clarify this observation further, as it was at odds with Harl’s conclusion, Railey explained that when his 1996 field school students re-exposed these soil discolorations and tried to follow them, to track them down to their bottom to find possible post holes or other structural information, these ‘wall trench’ dark soil anomalies proved not to be vertical wall trenches. They clearly did not go down deeper vertically but instead kept overlying and paralleling the top of the subsoil slope beneath them running downhill at perhaps a 30-degree angle toward the edge of the bluff, thus following and conforming to the original slope of the bluff. Railey reiterated his conclusion, showing me the evidence from his 1996 crew’s excavation wall profiles to support his argument that the strata discoloration evidence observed by Harl’s crew of volunteers at the end of their seasons were unfortunately just the original ‘Horizon A Zone’ soil surfaces of the 1810-1826 site. Because of the sloping nature of the bluff, these soil discolorations might appear initially in the shovel-leveled floor of an excavation test unit to mimic the edge of a more linear feature, but their edge definition then moved progressively northward toward the river as the unit was excavated deeper. Evident in wall profiles in test cut after test cut that Railey’s crews excavated, these darker soil discolorations proved to be just the original Cantonment ground surface if you will, sloping toward the bluff edge overlooking the river, being darker topsoils which had been buried by subsequent WPA levelling and contouring of the site area in the 1930s, and were unfortunately thus not Cantonment building evidence at all. Railey said that he assumed because of short time- constraints, Harl’s crews of volunteers had just come down on the darker colored deposits but did not have the time nor the training to try to follow them deeper and horizontally to their termination, and thus had mis-identified them.
Railey’s 1996 crew finished excavating and clearing out the limestone wall-lined root cellar which had been under the main administration building on the north side of the Cantonment (Fig. 7). In doing so, as well as the additional expected ceramics, military buttons, lead shot, gunflints, and bottle glass, part of a metal bucket and other metal fragments were recovered. The bottom part of the east wall of the cellar had well-preserved fragments of mortar surviving from the construction of the limestone block wall (see Fig. 8). The 1996 Railey crew also uncovered the remaining portion of the entry ramp, typical of root cellar construction, at the northeast corner of the north side, indicating that the cellar had been entered by this means only, and not from any structural entry from any building over it (Railey 1996:4).

Railey’s 1996 (and also apparently 1997) crews also put in test excavations which thoroughly circumscribed the limestone building foundations of the structure just outside the northwest corner of the Cantonment area, the apparent north half of the later Tandy house (Fig. 4 and 5). Railey concluded that the local folk-lore that this building had been the Cantonment powder house, or part of an officers’ quarter, or another building of the original fort, because it was not far from what had been surmised to be the northwest corner of the Cantonment, proved to be incorrect. This structure was constructed perhaps with materials salvaged from the fort after its abandonment, but never was part of the fort. Harl had suggested this re-interpretation earlier, based on his 1992-1994 explorations, and Railey said his work conclusively proved Harl’s suggestion to be correct. Harl and Railey both concluded this structure was part of the later Tandy farm house, built of materials recycled from the fort.

To run the 1996 and 1997 Belle Fontaine excavation work, Van Reidhead hired not only Jim Railey as project director, but Catherine Koziol to be Railey’s assistant. [Catherine Koziol was the wife of a Washington University employee and had hoped to use the WUSTL tuition assistance benefit to enter the University College’s Master of Liberal Arts Program, where she planned to utilize analyses of Cantonment Belle Fontaine artifacts for her thesis. However, she later became pregnant and after a few years ultimately dropped any considerations of pursuing a degree.] Railey and Reidhead apparently did not hit it off during occasional consultations that first summer. However, thinking their problems had been worked out, Reidhead then hired Railey and Koziol again for the second season of 1997.

As a Fort Belle Fontaine Archaeological Partnership advisory group member, I had received a copy of the 1996 season’s work report that Railey prepared for Reidhead that year and heard Reidhead’s report to the group that he had hired Railey and Koziol to continue for the 1997 season. Thus I was unaware of any personnel problems, which Reidhead apparently considered confidential between boss and employee. However when I asked Jim Railey following the 1997 season, after several months with no communication, when the advisory group would receive a copy of that season’s 1997 report, Railey directed me to Reidhead. Railey said that he and Van had come to loggerheads, and that Railey had left all the copies of his report, along with all the field notes, catalog, plat maps and profiles, artifacts, and all field excavation equipment, at UMSL and had ‘washed his hands’ so to speak of the project, and further he had been directed by his Ph.D. advisor to turn his attention to completing his own dissertation. Hence Railey said that Reidhead would be responsible for supplying the advisory group with the 1997 report and any information on future operations. With no recent meetings, it was evident that the Fort Belle Fontaine Archaeological Partnership advisory group was collapsing. Nevertheless, I assumed the 1997 report would be available, and particularly also having an active interest in regional historic archaeology, I wanted to see what the official results of the season were, so I then contacted Reidhead to secure a copy of the report. I had hopes that the results would be important enough that we might be able to revive the group to continue in future years. However, to my great surprise and confusion, when Van got back to me, he said he
had no recollection of receiving any reports or documentation from Railey, that he had no paper work of any sort. Thus the 1996 report is the last written report that I saw on the project; what transpired in the 1997 season is not clear.

Subsequently after a couple years when it became very evident that neither Railey nor Reidhead was going to do anything more about the Cantonment explorations or reports, that Reidhead had moved on to other non-local research interests, and that the Fort Belle Fontaine Archaeological Partnership which Reidhead had organized and chaired had permanently collapsed, I decided to have the students in my WUSTL Historic Archaeology classes do some ‘salvage work’ on the five seasons of excavations. I thought by having the students examine the excavated materials, it would be a good mechanism for them to learn ‘hands-on’ how to analyze historic artifacts such as gun flints, lead shot, uniform buttons, ceramics, glass bottles, and the like. And not only would the students be obtaining some analytical skills, but their work at the same time would serve to salvage at least some better information on the results of the archaeological excavations, the latter particularly important because Cantonment Belle Fontaine is a significant site for local and national patrimony.

To do this sort of salvage archaeology, the students would need access to the excavated artifact materials and documents from all five seasons from 1992 to 1997. When I then visited the UMSL department with this request, the secretary said she could find no paper work, catalogs, or other files, but she did show us where the boxes of artifacts were in the department’s storeroom in the basement of the UMSL campus’s J. C. Penney building. With the help of WUSTL Historic Archaeology class students, the boxes of excavated materials were transferred to our campus lab, where they were provisionally added to the collection of a few miscellaneous items of Belle Fontaine materials previously cataloged by Koziol under the department collection number WU 96-2847.

[WU 96-2847 site number explanation to assist in future retrieval: WU = Washington University anthropological archaeology collections; 96 = the year, 1996, that the material was first entered into the catalog system; 2847 = the 847th collection catalogued since the department collection number system was established in 1970. The collection sequence numbers had been arbitrarily started at number 2001 because of an earlier miscellaneous set of materials from an amateur archaeological group which included WUSTL staff and alumni called the Knockers, who had been active in the St. Louis area in the late 19th and early 20th century. The Knockers collections had been only spottily relocated, the group having disappeared 75 years earlier while the current department had only been formed in 1968. The size and number of any additional Knockers collections to be found was unknown when the current numbering system was created, so a generous set of 2000 numbers was set aside for that and any other then unknown pre-1968 collections.]

I made some subsequent futile contacts with UMSL later that year to see if they had had any luck finding the 1997 report, artifact and field catalogs, plat maps, wall profiles, any other kind of documentation for these excavated materials, but the department had not been able to locate any supporting documents. With none being found, I decided the way to proceed on this salvage project was to try to rescue what information that we could by having the Historic Archaeology class students temporarily re-catalog artifacts under our WUSTL control number, listing each bag by sequence number and any previously identified context as the field collections were processed by the seminar students in the lab.

The new control numbers were particularly necessary because there were no apparent original catalog numbers on the project boxes that came from UMSL and also none on several of the collection bags in them. As was typical a quarter century ago, the Belle Fontaine archaeological field collection bags were of Kraft paper, written on in pencil. Ordinarily in field
schools such artifact field bags then would be taken to a field lab for processing, where the contents would be washed, sorted, labelled with reference numbers, and re-bagged in new paper or plastic bags with appropriate documentation written on the bag and artifacts in India ink or permanent marker. Field schools often were run on shoestring budgets, so that plastic or other more durable storage bags were not affordable back then. (Modern technology makes plastic much cheaper today.) Paper bags are not necessarily an issue; I have handily used properly processed collections 50-75 years old stored in paper bags. Although the acid in the paper makes such bags a bit brittle over time, they still were functional. However, while the artifacts from last two years of the Belle Fontaine field work had been processed, the catalog had not been located so all items were without context, and worst, most of the collections from the first three seasons from Belle Fontaine had not been washed or otherwise processed at all. The dirt-covered artifacts and other retrieved items from those seasons were in the same soiled paper bags in which they had been collected at the field screens. Because the unfinished basement where the collections had been stored at UMSL after their Archaeological Survey had been closed was apparently not climate nor humidity controlled, the dirt-encrusted contents tended to attract moisture and were often heavily mold-covered/contaminated and the bags containing them decaying as well. Some of the paper bags had disintegrated in less than five years, spilling their contents. For other paper bags, the field pencil numbers markings were missing, or bag decay rendered the pencil writing no longer legible.

The WUSTL lab students re-copied all of the information they could read from the paper collection bags into a temporary catalog, with the expectation of subsequently being able to correct and correlate this salvage series of WUSTL catalog numbers with the actual excavation field catalog bag numbers and context associations when the field catalogs surely would be found. Unfortunately, so far the missing original paper documents are still unlocated.

This was a major problem. The fact that we had large number of items with no available documentation (rotted bags, illegible pencil writing, field documentation missing), and also the fact that the site itself had been seriously disturbed by the grading and ground leveling during the WPA work, meant that the identifiable context was missing for a significant part of the collection. Archaeologists are hesitant to work with collections with no context, because context is the usual critical sine qua non of properly interpreting artifacts. Hence I reluctantly came to the conclusion that at best the materials collected by Harl and Railey, at least at this point, could only be treated just as one large multi-year surface collection from the Cantonment Fort Belle Fontaine, until or unless the missing field catalog and other documents were found.

Once the salvage project was begun, analyses were still delayed. During the first two years of classes assigned to work with these artifacts, the students spent regrettably little time actually doing any analyses, because they had to spend most of their lab time trying to decipher faded or partial bag labels to rescue any information, and then in washing, counting, sorting, labelling, and other processing activities of the dirt-encrusted bag contents from the first three seasons, activities which ordinarily are done during the actual field excavation work before analyses can begin.

In sum, while the following discussion refers to artifacts derived from Cantonment Belle Fontaine, no definitive or reliable context specific horizontal or vertical provenience information was available for the majority of items, and hence the materials described here are essentially equivalent, as noted above, to just no more than a large ‘surface collection’ of artifacts from the Belle Fontaine locale.

(b). Analyses.
Tree Usage

The first iteration of Cantonment Belle Fontaine was constructed in the fall of 1805, but by 1809, the log buildings had already become so badly deteriorated that when Lt. Col. Daniel Bissell arrived, he immediately contacted Army Headquarters indicating that the encampment structures were in critical need of replacement. The virtual log building collapse in less than five years at first seemed difficult to understand. There are many historic 19th century post-Civil War sharecropper or tenant-farmer log-and-chinked cabins (often erroneously called slave cabins) seen in Missouri, many still in very good condition, several which are upwards of 125 years or more old. In contrast, how did the log buildings of the fort fall into ruins in only five years? Early sources report that the trees utilized in building the Cantonment structures were ‘green’ logs still with their bark on them. The bark would certainly help to hold moisture in and speed decay but should not be the only reason for such rapid deterioration. Reports of building the first iteration of the Cantonment speak of the men floating trees down river to the levee site. The only tree species specifically identified as being obtained this way for use as wall logs were cottonwood and sycamore, and oak for the shingles.

Often the local types of wood for building materials are clustered into deciduous hard-wood trees vs. coniferous soft-wood trees. The later 19th century ‘Paul Bunyan’ clear-cutting in places like Minnesota involved almost exclusively soft-wood pines and firs, trees that are much easier to cut down by axe (as I can testify, having spent two summers in college doing clear-cutting with an axe with U.S. Forest Service crews in Montana and Idaho). The logs of the surviving post-Civil War tenant farmer cabins I referred to above almost always have their bark all or mostly removed, enhancing durability and longevity, and where I have been able to identify the timbers, are of hard-wood hickory and oak. Such oak and hickory ‘hard-woods’ are much more resistant to rot and decay if properly situated. As indicated in the discussion below on nails, the use of hard-woods in the second iteration of the Cantonment was no doubt the reason why the greater portion of the iron square nails recovered were bent or broken; iron nails are ill-constructed for pounding into such hard-woods as compared to modern steel wire nails. But in contrast to the deciduous hickory and oak, deciduous cottonwood and sycamore are relatively ‘softer’ woods, easier to work by axe but by the same token also are less decay-resistant.

To rapidly construct a complex project like the 1805 Cantonment, the soldiers were sent out upriver to cut down trees along the Missouri River banks, to float them downstream to the Cantonment construction site, in order to build a functional complex as quickly as possible. The soldiers would have found taking cottonwood and sycamore, as softer types of deciduous hard-woods, both much easier to chop down, and being closer to the river banks, requiring less work to process and get into the river to float back to the Cantonment site. In terms of the second growth trees I have seen in this area, not only do cottonwood and sycamore trees tend to dominate levee banks, but they often have trunk sections that are straight for longer lengths than do hickory and oak trees, two other frequently available types of trees which unfortunately have major lateral branches often and frequently, and thus present additional work if one wants to secure a possible single shaft timber for a constructing a log structure wall. Having watched my father and an expert Finnish log cabin builder labor in western Montana to secure all the necessary logs for building a two-story log cabin in the forest for our family seventy years ago, one of the first tasks was searching surprisingly long distances for trees with appropriate straight trunks, which was no easy job. As a child, I would tell them I had seen a straight trunk nearer to the building site that they had missed, only to have them look at it and explain why the tree which might look nice and straight from a distance actually had an unacceptable curvature or bend, extraneous limbs, or other negative factors. While I have not found any relevant source which states that all or the majority of building timbers at the first iteration of Belle Fontaine
were cottonwood and sycamore, those were the only two tree species I found explicitly mentioned in Cantonment records. They also are both rather ‘punky’ wood, a factor which noted above makes them easier to cut down and shape by axe but as well one which means that they tend to decay and disintegrate rather rapidly, particularly when laid with their bark still on directly on wet ground soil of the levee as they were apparently at the first version of Cantonment Belle Fontaine. Such trees would have provided the necessary material to rapidly build the required log buildings, but the very factor which made them easy to get and rapid to utilize meant they also had a shorter use-life.

Another factor which hastened the demise of the first iteration of the Cantonment was its location. The levee area where the Cantonment was situated was subject to seasonal flooding, and as well, initially the fact that the Missouri River was actively eroding the south or right bank at this location was unremarked. Only a few years later, in 1819 when Stephen Long was at the second iteration of the Cantonment up on the bluff, preparing to go with Henry Atkinson on their Yellowstone Expedition, he wrote on June 22 that the first iteration location was “now being occupied by the bed of the river. A few fruit trees only, which stood in the end of [the] garden, are yet standing, but are now on the brink of the river” (cited in McDermott 1967:133).

Originally I was taken only by Long’s documentation of the evidence of the complete disappearance of the site of the first iteration due to river erosion in less than two decades, which explains why the first Belle Fontaine version was lost more than 200 years ago. But in re-reading his comment, another detail, the mention of the few remaining ‘fruit trees’, caught my attention. What kind of fruit trees? Peach trees seem most likely to me. In other early documents in the St. Louis region, peaches are most frequently mentioned, and apples rarely. At the Territorial and later State Governor Frederick Bates’s Thornhill estate in Chesterfield along the river bluff overlooking the Missouri River, only a few miles upriver from Belle Fontaine, in 1810 Bates purchased a peach orchard and distillery from John Lewis, who had developed it a decade earlier (Browman 1974:72). Bates, as Lewis had done before him, sold folk-style peach brandy to travelers along the river. The peach fruit available was an earlier variety, smaller and less meaty and less sweet than our current market varieties. Because fresh peaches have a short shelf-life, early settlers seem most frequently to have fermented their crops and distilled them as alcoholic beverages.

Later apple trees became more popular in the region. But I think if the fruit trees at Belle Fontaine had been apple trees, they still would have been utilized primarily to make alcoholic drinks like hard cider and applejack. Apple trees were spread widely by pioneers in the Midwest in the early 19th century, particularly by John Chapman (legendary Johnny Appleseed). What the folklore often does not mention is that many of the varieties of the apple trees that he and others initially distributed were what were called ‘spitters’ as contrasted to the ‘eaters’. Today, our grafted apple varieties in the markets are almost entirely the sweeter ‘eaters’, but two hundred years ago many of the apple varieties available were ‘spitters’, which if sampled directly from the tree had a bitter, acrid taste, hence the term ‘spitters’. ‘Spitters’ make excellent cider and applejack but are not for direct snack or eating consumption. Thus when I saw the comments by the officers in the Cantonment correspondence file complaining about the men spending too much time gardening for brewing rather than gardening for daily meal sustenance, at first I envisioned the troops growing grains and other plants for brewing home-made beers and wines. But I think now we should also add on tending the fruit trees in order to also make peach brandy and/or maybe applejack as well.
Zooarchaeology
(with report assistance from Jennifer Fee, Alexandra Jensen, Christopher Lockwood, Meg Thornton, and Adam Webb)

Zooarchaeological studies were conducted to aid in reconstructing the types and origin of meat in the diet of the soldiers at the Cantonment, as well as any other animal usage. Field recovery bias impacted the numbers and kinds of zooarchaeological specimens, much as it did for the various lead shot categories discussed later. Smaller zooarchaeological bone were rarely recovered, and more fragile bones, like bird bones, often were badly damaged in the screening process, which involved using Marshalltown trowels and/or blocks of wood to push the dirt clods when clayey through the 1/4- or 3/8-inch width size screen mesh utilized in processing the excavated soil. Thus the below discussion, particularly the number of identified bones, is biased in favor of larger bones (and also larger animals) by the excavation recovery techniques.

The zooarchaeological specimens were analyzed over a period of four years by students who were simultaneously taking zooarchaeology training course work with the department’s zooarchaeologist Dr. Fiona Marshall. Christopher C. Lockwood became particularly intrigued with the assemblage and worked during three years in different classes returning to the 1992, 1993, 1994 and 1996 assemblages to try to identify more specimens and create a more complete picture. Much of the animal usage details below are the results of his analyses.

From the reports of the officers sent back to the Army headquarters, we know that the enlisted men at the Cantonment spent time hunting and birding animals native to Missouri to provision the post, that the enlisted men were involved in gardening or minor farming growing vegetables and grains for the fort consumption, and that the fort also purchased food supplies from the St. Louis town area vendors. Regrettably, any interpretation of food zooarchaeological remains is handicapped by the fact that following the fort closure, there was a farmstead subsequently built on the abandoned Cantonment lands and later the St. Louis Boys Farm also incorporated the old Cantonment property, both potential sources for later zooarchaeological materials. The most productive single location of recovered bone specimens was the abandoned root cellar, thought to have been under the Cantonment’s administration building, whose six-foot deep hole had also been utilized for refuse disposal after the Cantonment was decommissioned; the rest came from disturbed surface deposits.

A total of 1,776 zooarchaeological specimens were identified from the 1992, 1993, 1994, and 1996 assemblages; the 1997 assemblage was later checked by some students after Lockwood, but no new human modification patterns and no new animal species were found, and so the 1997 materials were not carefully worked up. Several of the bone specimens were only identifiable to taxonomic class owing to lack of completeness of an element fragment. The fact that 47% of the entire bone assemblage showed very significant post-depositional breakage indicated a great deal of heavy site disturbance. This type of extreme post-depositional fragmentation is a good clue to the subsequent site disruptions such as the WPA grading and levelling. Other than a high degree of fragmentation, most of the specimens were well preserved, suggesting rapid burial and limited exposure to the elements.

The 268 bird bone specimens accounted for 15% of the total assemblage, and 23% of the identifiable assemblage. Small birds (cardinals, jays, songbirds) were represented by 17 specimens. There were 120 specimens from chicken (Gallus gallus), and another 33 specimens from larger birds such as Canadian geese (Branta canadensis) and/or wild turkeys (Meleagris gallopavo).

The 772 identifiable mammal bones accounted for 44% of the total assemblage and 68% of the identifiable specimens. There were 34 bones from very small mammals, including
various mice (Cricetidae), rats (Rattus sp.) and moles (Talpidae), most of these bones being from rats. These mice and rats were responsible for the majority of gnaw mark damage on other small bones. There were 168 medium-sized mammals, essentially wild animals which would have been the enlisted soldier-hunters’ prey, including rabbit (Sylvilagus sp.), woodchuck (Marmota monax), raccoon (Procyon lotor), squirrel (Sciurus sp.) and opossum (Didelphis virginiana), which account for 10% of the total assemblage and 15% of the identifiable specimens. The identifiable large mammal bones found included 10 white-tail deer (Odocoileus virginianus), 11 sheep (Ovis sp.), 147 pig (Sus scrofa), 42 cattle (Bos taurus) and 3 horse (Equus caballus) bones. Also among the large mammal bones was also one potential carnivore: 4 dog (Canis sp.) bones were identified. In addition to these bird and mammal bones, there were other taxa recovered, including 24 fish (mainly gar and catfish), 78 snails, 3 turtle and 1 freshwater mussel.

Little evidence remained of any cooking techniques. Only 21 bone specimens showed typical fire-induced discoloration or calcination. However it was not clear whether such damage occurred during cooking, or perhaps later during refuse burning. Little in the way of large-scale cooking implements were recovered, being limited to one 11-inch long iron spoon, one fragment of a two-pronged bronze coated fork, and one portion of a fancy decorated bronze spoon. These implements cannot be clearly associated with either the fort occupation or the later occupations.

Other evidence which would identify patterns of butchering and bone modification such as cut and saw marks, as well as carnivore and rodent gnawing, were studied as indicators of human-animal interactions. A total of 97 bones or about 6% of the entire assemblages showed cut or saw marks; saw marks were limited exclusively to the cattle and pig bones, with the majority on cattle bones. For the cut-marked bones, microscopic examination identified some metal traces indicating that the cut marks had been made by iron blades (rather than prehistoric chert knives, thus confirming their historic derivation), but then the bones were subjected to damage by Cantonment or later site-use activities. In contrast to the linkage of saw marks and domestic animals, the lab workers found the bulk of cut marks only on the native wild species, leading them to presume that the wild animals were procured by the enlisted men on various hunting and fishing expeditions and butchered by the troops at the Cantonment, and that the domestic animals came from government purchases from commercial suppliers in St. Louis. This is a pattern reported in other studies of 19th century Missouri sites such as Hermann and was not unexpected. An advertisement in the 1826 Missouri Republican (Vol. 5, No. 223, August 6, 1826) which called for bids to supply 880 barrels of pork to the military facilities in St. Louis “or within 20 miles of that place” would support the interpretation that pork was one of the products commercially supplied to Fort Belle Fontaine.

Bone gnawing marks were attributed to carnivores and rodents. Six examples of medium to large carnivore gnawing were identified, and three of these bones also exhibited both cut and saw marks. The lab workers found the gnawing on these six bones congruent with damage by dogs, supported by the fact noted above that four skeletal bones from dogs had been identified, and suggested that either dogs were given the bones, or salvaged the bones themselves later. These dog/carnivore-gnawed bones came from the area of the Tandy house just beyond the northwest corner of the old Cantonment, which led researchers to see them as farmstead period pet dog-related. Rodent gnawed bones were more common; at least 54 bone specimens exhibited evidence of rodent gnawing. The majority of these came from the fill of the root cellar.

The pattern of the specific domestic vs. wild animals, along with that of cut marks for wild animal butchering and saw marks for domestic animal butchering, is one repeated in other archaeological excavations of 19th century Midwest forts as well as other archaeological excavations of 19th century Midwest farmsteads. Because of the heavy disturbance of the
Cantonment site, as well as the usage of the root cellar depression as a later refuse dump, it is not possible to indicate which, and how many, of the bones came from the Cantonment occupation, and which, and how many came from the Tandy/Leathe farmstead occupation. Both of these occupation events might likely be expected to yield similar assemblages. Still it is probably reasonable to suggest the bone assemblage identified is minimally representative of the diet at historic Cantonment Belle Fontaine.

**Ground Penetrating Radar**
(with data from Rupert 1994)

During April 1994, Dr. Gerald Rupert of the University of Missouri-Rolla, assisted by three Rolla engineering students, did a trial Ground Penetrating Radar scan over an area roughly 15 by 25 yards where the Fort Belle Fontaine cemetery had previously been situated. This cemetery had been sited on the next low rise to the southwest above the bluff; the burials (see pp. 7-8 here) had been partially removed to Jefferson Barracks cemetery in 1904. UMSL excavation director Joe Harl hoped that this new work might identify some additional unmarked burials, particularly as he recounted information that WPA workers had reported finding human remains during their levelling, construction, and road building activities in the 1930s (Harl 1995:30).

Twenty-five years ago, archaeological use of this kind of GPR work was just in its infancy, and image resolution was not yet very good. Rupert’s report said that radar images were first obtained along N-S lines beginning near the road and extending south across the area that Harl thought might have burial remains. Short E-W traverses then were made perpendicular to these lines. There were a series of anomalies, about six feet in depth, and spaced at approximately three to five-foot intervals. The uniform spacing suggested the presence of unmarked graves. Three 6-feet by 6-feet test cuts were begun late in the 1994 field season to verify these possible burial locations, but the UMSL crew ran out of time, and all three tests were terminated at a depth of about three feet and did not get down to the six-foot level and were thus all negative. This evidence was not followed up by Railey’s crews later for two reasons: first, the cemetery was more than 100 yards outside of the Cantonment building boundaries and thus they felt outside of their purview, and secondly, Missouri’s unmarked burial laws meant that casual testing for ground-truthing was not allowed.

The Rolla GPR crew then moved over near the bluff edge to test an area roughly 80 feet east of the root cellar excavation where Harl thought the main Cantonment administrative building had been located. Harl believed that they should find wall trench footings which would identify the administration building. GPR images were taken along a line running N-S from the loop road along the bluff edge across the presumed area for roughly 100 feet south, and then when this test was negative, some short perpendicular traverses were made west of this line. No anomalous features were identified. A second N-S line from the bluff edge loop road across the target area was made about 25 feet further east, and once again short traverses oriented perpendicular were made as well. This time a non-linear anomalous feature was noted which was assumed by the Rolla crew to be possibly associated with buried rubble and was flagged for subsequent ground-truthing in the next excavation season. However Harl’s test units in this area three months later during the 1994 summer field season failed to identify either rubble or any structural features.

**Magnetometry**
(with data from Rachel S. Popelka’s 1998 thesis)

In November 1997, a magnetometer survey was made of a small area to the east of Cantonment Belle Fontaine, in the eastern part of the St. Louis County Park managed portion of
the property. This survey area was where a long exploratory back-hoe trench had been excavated during the previous summer, and which Jim Railey had suggested might be a likely location for a barn or stables associated with the fort, in part because it was adjacent but downwind (see Fig. 9). Again, as with the GPR work, this type of magnetometer survey was in the infancy of such methods as applied to archaeology, so mapping results were very diffuse as compared to the present technology. The magnetometry work was a combined project by the WUSTL Exploration and Environmental Geology class taught by Dr. Douglas A. Wiens and Dr. Roger J. Phillips, doing field lab magnetometer work with their class to test for buried features in the fall of 1997, and by Rachel Popelka for her senior research paper for her degree requirements in the Interdisciplinary Program in Archaeology, chaired by Browman.

The rectangular block area where the magnetometer survey was conducted included the L-shaped linear pattern of limestone wall supports found the previous summer about 425 feet east of the Cantonment root cellar excavation. Test excavations had been made by the 1997 Summer Field Archaeology class along the back-hoe trench cut by volunteer Jim Meiners which had revealed several limestone wall or pillar support sections with regular spacing between them, arranged in an ‘L-shape’. What was exposed was evidence of one wall segment about 30 feet N-S joined to a continuing wall segment running about 50 feet E-W. Time did not permit completing the excavation of the walls that season to find what Railey told Popelka that he assumed was a rectangular structure. The 1997 summer excavations had recovered iron horse and mule shoes, a scythe blade, and metal harness fasteners from the back-hoe trench tests. Based on these artifacts as well as its location, Jim Railey had interpreted the L-shaped building segment with limestone piers as the foundation for a stable or barn.

The magnetometry survey was designed not to look directly for additional limestone walls or support pillars themselves, but to see if it could be used to identify evidence of other ferric metal artifacts which could help confirm the structure as a barn or stable, as well as hopefully finding some evidence that would tie the barn or stables to the Cantonment period. A half dozen or so metal anomalies were located inside the area defined by the L-shaped wall segments, which were assumed to be additional horseshoes, mule shoes, or other iron-based farming equipment. These anomaly locations were then flagged to be ground-truthed during the presumed next summer field season of 1998 – which never occurred, as UMSL ran out of funds and the project was abandoned.

**Horse Shoes, Harness Fasteners, Scythe and Barbed Wire.**

As the magnetometry discussion above noted, a small number of iron horse and mule shoes, a scythe blade, and harness metal fasteners were recovered in the 1997 excavations of the barn or stable area which was 300-400 feet east of the Cantonment enclosure itself (see Fig.9). These items were badly corroded and rather generic in style but seemed typical of other 19th century examples seen in published works. Their occurrence associated with this structure helped ‘cement’ the interpretation of the small portion of this structure exposed as stables. While this building seemed to evidently date to the 19th century, the few artifacts recovered make it difficult to ascertain if the stables or barn dated as early as the 1810-1826 period, or whether this barn rather was the later 19th century Tandy ‘large barn’ (as listed in David Tandy’s will in 1875), which was utilized during their occupation of the property, or even perhaps a single barn utilized in both periods.

Some barbed wire segments were found in the Cantonment root cellar mixed period debris. However because barbed wire only made its first appearance during the Tandy farm period occupation, these barbed wire items would have related to the farming practices of the Tandys or Leathes.
Nails
(with report assistance from Duo Li, Ray Nichols, and Jason Patel)

In the Correspondence File Records of the Office of the Quartermaster General, Fort Belle Fontaine, Missouri, for the years 1810 to 1812, (see references for complete citation), there are several documents (mainly bills and receipts) relating to the construction of the second version of the fort. These bills and receipts include reference to purchases of square nails, particularly 6-penny and 8-penny size nails, as well as some other hardware items, as parsed in the first section of this report.

The most detailed receipts were for the construction of the Armory, also termed the Artillery and Arsenal Magazine, which as far as the War Department was concerned, was the most important building in the Cantonment. As noted in greater detail earlier in this report, the March 1811 records show billing for the purchase of ash logs for shingles for this structure. The April, June, and July 1811 armory construction receipts contain billings for more than 190 lbs. of nails of at least two sizes, two padlocks, 20 gallons linseed oil, and 100 lbs. of Spanish White for window putty and paint for its construction and finishing. The wall logs, shingles, linseed oil, and Spanish White would not be recoverable by the procedures employed in the excavations by Harl’s and Railey’s crews, but the 1992 to 1997 excavations could potentially provide verification of the nail sizes, the hardware for the door hinges and latches including the padlocks, as well as the window glass. The building footing outline might also have been possibly identifiable by the excavation procedures utilized, but the armory location within the fort was unknown, so no test excavations were made to look for this kind of evidence.

Although six-penny and eight-penny nails were specified on some armory receipts, exact nail sizes were not specified on other armory nail purchases. However there were additional listings of nail size purchases for the subsequent construction of the officers’ quarters and the troops quarters. For example, in December 1811, General Bissell sent in bills for 200 lbs. of six-penny nails for fastening shingles and doing inside work on officers’ quarters. On April and June 1812, billing was received for purchasing 32 lbs. of six-penny nails and 31 lbs. of eight-penny nails from St. Louis merchant Edward Hampstead to complete construction of the troops’ quarters at the Cantonment. And a billing for another 55-80 lbs. of nails was received the end of June to complete the ‘pickets’ between the buildings just as the War of 1812 was beginning.

Badly rusted and corroded iron square nail fragments were one of the most frequent artifacts recovered in the Cantonment excavations. The majority of these nails were broken or bent. Much of the wood available for utilization was of local hardwoods, such as hickory and oak, woods that are very difficult to drive softer iron nails into without bending or breaking. This was likely one of the reasons that the softer wood deciduous sycamore and cottonwood trees had been frequently utilized.

One pair of students who took on the nail analysis opted to select a pilot sample of 200 nails from a broad range of excavation units and all field seasons. They sought the most complete nails specimens, in order to secure nail size categories, and because they also hoped that the nail heading variety types might be useful for dating the square nails. They were instructed to secure all types of nails, both iron square nails as well as post-fort steel wire nails, so that it might also be possible to ascertain the admixture of Tandy or other later refuse in the collections.

The historic archaeology lab workers were not clear why nails were sold in penny sizes, even today, so it was useful to reiterate the penny types and their relation to the ideal lengths of the nails so classified:

2d/2 penny = 1-inch length [also known as sprigs or tacks]
4d/4 penny = 1 ½ inch
6d/6 penny = 2 inches
8d/8 penny = 2 ½ inches
10d/10 penny = 3 inches
12d/12 penny = 3 ¼ inches
16d/16 penny = 3 ½ inches
20d/20 penny = 4 inches [nails 4 inches and longer often called ‘spikes’]
40d/40 penny = 5 inches

The letter ‘d’ derives from denarius, an old Roman coin, later associated with the British penny or pence; in theory it refers to an earlier era when nails were made by hand and were sold by penny (or pence if in England) units. The best preserved of the square nails at Belle Fontaine were made by machine, having the typical machine-made manufacturing evidence, but most of the square nails were too rusted or corroded to ascertain hand-made vs. machine-made evidence. While the working assumption adopted was that the Cantonment square nails were all machine made, for the limited question at hand it turned out not to be important whether they were hand-made or machine-made.

The total pilot sample size of complete or relatively complete nails created was 210 nails, of which 107 were wrought iron square nails, and 103 were machine-drawn steel wire nails. Initially I thought that the students had deliberately tried to select a 50:50 sample size. But they said that was not so. The iron nails, being of much poorer quality, and also being in the ground perhaps as much as a century longer, had corroded and fragmented the most, so the students found fewer complete examples in the collections they took their pilot samples from; the steel wire-drawn nails, although far fewer in absolute number in the total collection of nails, were in general in only a rather minor corroded state, easily identified, and less damaged. So the sample was influenced by the material (iron vs. steel), by the quality of the material (steel wire nails required a much higher quality raw material and thus suffered less deterioration), and by the time the items had been in the ground exposed to weathering elements (the Cantonment square nails had 180 to 200 years exposure, while some of the wire-nails may have had as little as 50-60 years exposure).

These factors clearly influenced the sample assemblage of complete nails which were analyzed. That is, while the sample analyzed was nearly a perfect 50:50 square nail to wire nail ratio, any casual inspection of the total nail assemblage clearly indicated that it was dominated by square nails. However the number of steel wire nails indicate that the surface artifact collection was also evidently impacted by later period construction events. Steel wire nails would have been in use by the end of the Tandy farm occupation of the site. Steel wire nails would have been virtually the only nails used during the 1910s and 1920s original construction of the Boys Home on the site, and the later 1930s and 1940s additions at the Boys Home. While some square nails are still on the market today, construction after the 1890s is usually nearly wholly of wire-drawn steel nails. The steel nails (plus items such as the marbles and glass bottles) make it abundantly clear that the Cantonment ‘surface collection’ is not a pristine sample of 1810-1826 Cantonment, but that the site and associated artifact collections have been significantly impacted by later activities.

Hence only the square nails potentially related to the Cantonment period. The analysis of the square nails provided evidence of only a few nails of ‘spike’ size (4-5 inches in length). In support of the purchase records for 1810 to 1812, which sometimes just mentioned securing nails but did also identify buying six-penny and eight-penny nails, about half of the complete square nail inventory analyzed (48%) was of six-penny and eight-penny nail size. I was surprised to note, however, that some 40% of the presumed complete square nails measured were of two-
penny and four-penny size, sizes often used only as roofing nails or flooring brads, perhaps activities which resulted in less nail damage. Analysis was also attempted on the square nail head-type, sometimes a definitive characteristic for these nails. Most of the heads were too badly corroded to make head-typing clear, but there were a dozen rose-heads and a couple T-heads, while the majority of square nails where head typing was possible seemed to have had only rectangular or square flat heads, all types appropriate to the period. The later steel wire-drawn nails showed a somewhat different size pattern, being generally longer. In contrast to the square nails, slightly more than half of the steel wire-drawn nails sample were eight-penny and ten-penny size, while a third were four-penny and six-penny sizes, with relatively few roofing or flooring brads or spikes.

**Door Hardware**

(with report assistance from Lauren Hosek and Michal Quennoz)

In 1810, as noted previously, Bissell had requested the necessary hardware for about 30-40 buildings, surmising that 15 buildings would require hardware for two doors, and the rest would need similar materials for one door. Reference to items such as padlocks purchased for the armory in 1811 made it clear that at least part (if not all) of the Cantonment structures had hinges and door latches, padlocks, and similar hardware. However a period newspaper report indicated that once the fort had been officially de-certified in the 1830s, that surrounding farmers visited it to salvage various hardware items from the buildings (as well as window glass) for their own use. Thus the lab crews presumed hinges and door hardware, being among the items salvaged by these local farmers, would likely be rare items to actually be recovered.

A total of nine keys, three key plates, nine handles and latch pieces, and seven hinges were found in the excavations. Noteworthy was the fact that most of the handle, latch, key plate, and hinge items came from the barn or stable excavations. The door handle, latch and key plate pieces, as well as most of the hinges, were of styles that dated to 1840 and later. Only one of the seven hinges, a large 12-inch iron strap hinge, was of the style utilized in the St. Louis area during the first part of the 19th century period occupation of the fort. In this case, this possible fort-period large iron strap hinge did come from the Cantonment collection area itself, perhaps making its fort association more likely.

Almost all of the nine keys came from the waterline trench backdirt collection in the 1997 season along the service road, which had proved in the examination of other artifacts to have mainly late 19th and early 20th century associations. Analysis of the types and styles of the keys confirmed this expectation of post-fort key association, with perhaps one or maybe two of the keys of types first occurring in the late 19th century and most of the rest of the 20th century types. There was only one very badly corroded iron skeleton key of the style that was in use at the time of the fort occupation. Unfortunately this one key of possible fort-period style came from the excavation area of the barn or stables just east of the fort, making its temporal association problematic.

If the barn or stables did ultimately prove to be also associated with the fort use, then perhaps the hinge and the skeleton key might both turn out to be derived from the Cantonment occupation. However because the other hardware which came from the barn or stable area was typical of the late 19th century, this appeared to indicate either the barn or stable was built later, that is post-Cantonment, or that if Cantonment-built, it continued in use by the farmers at the site after the fort was decommissioned.

**Personal Items**
(with report assistance from Ellen Chapman, Joe Harl, Mary Holst, Stephanie Pan, and Susanna Vaihinen)

Items possibly related to personal items of officers and their families and the troops came from the excavations around the north side of the Cantonment. There was an early 19th century military policy of encouraging officers to house their family at military posts such as the fort in order to improve troop discipline and morale, although enlisted men were not permitted to have families with them on post. These Belle Fontaine officers’ women and children were virtually never mentioned, except perhaps for illnesses or deaths. One rare other reference relates to a major tectonic event retold by Missouri settlers over and over. This was a letter written by a Cantonment officer about the first of three major New Madrid earthquakes of December 1811 to February 1812, a letter in which after focusing on describing the quake’s impact and terror, the officer wrote almost as an afterthought that the women and children joined the enlisted men running out onto the fort parade ground for safety.

There were 17 items of personal adornment recovered, mainly from the area near the root cellar, including a woman’s bone comb, a woman’s brass-coated pendant, and several cufflinks or similar coat sleeve fasteners. In reading the analysis reports, it appears that most of these items did not relate to Cantonment occupation period but are more likely of later vintage. The bone comb seems to be the sole period possibility (Fig. 10), with similar illustrated examples existing in museum publications dating to the 18th and 19th centuries. The features of the brass-coated pendant make it likely to date no earlier than the late 19th century. The dozen or so fancy cuff fasteners or cufflinks were described as being made of brass, and several had embossed designs on the front such as small flowers or human figures, certainly not military-related. The backsides had a shaft soldered on the cufflink. Several of these cuff-fasteners were reported to have had two pieces of leather thong trapped or attached to the shaft on of the back. Particularly with the lack of any other perishable materials in the Cantonment period deposits, these latter cuff-fasteners would be clearly post-Cantonment, likely farmstead period or later artifacts.

There were 11 pieces of linear graphite and 44 slate fragments recovered, all interpreted as being Cantonment writing-related implements. While slate in general was also a popular 19th century roofing material, all correspondence refers only to fort construction employing split wood shingles. I have not seen reference to the Tandy farmstead roofing, but the farmhouse photographs (Fig.4) do not have slate roofs. As well these Cantonment-area excavated slate fragments were far too thin, too well-worked, often with shaped and beveled edges, to have been used as roofing tile. Although I did not see the comparative materials, the lab students doing the analysis wrote that the slate fragment were identical in fabrication and features to some early 19th century slate writing tablets they studied in the collections of the St. Louis Missouri Historical Society Museum. The linear graphite pieces all appeared to be ‘pencil lead’ size fragments, which were interpreted as the remnant byproducts of writing and drafting on paper at the fort.

There were 16 ‘kaolin pipe’ fragments, consisting of 11 bowl pieces and 5 stem sections. All but one of these pipe fragments were of white kaolin clay; one bowl fragment was not kaolin but rather composed of a reddish-brown colored clay, but clearly of the same pipe construction style. None of the fragments had any makers’ marks or identifiable designs, even though there were some remnants of external decorative grooving and other fragments of simplistic pipe bowl decoration. The pipe fragments were all characteristic of kaolin pipes utilized in the early 19th century. Lacking other diagnostics, sometimes this style of pipes has had rough date estimates assigned based on using temporal shifting of diameters of the smoke channel in the stems, but none of the student investigators were able to determine any pattern in the three viable fragments they had to measure.
A total of 51 marbles were recovered during explorations. Unfortunately nearly 40 of these marbles were glass marbles, clearly post-Cantonment because the earliest hand-made glass marble manufacture post-dated 1840, and machine-made examples dated half a century later. The manufacturing dates make these glass marbles possibly belonging to the three Tandy boys, although much more likely they were marbles lost by the boys of the later detention center facilities in the 20th century, because it was not until 1907 that machine-made glass marbles became available, and glass marble playing became a typical entertainment. Of the remaining marbles, seven were clay marbles (commies) and four or five were limestone marbles. Clay marbles were a common type for children to play with in the 19th century, hence the nickname ‘‘commies’, and were usually reddish, tan or brown, the original color of the fired clay. The diameter of both the clay and stone marbles at the fort site was an average of 14.25 mm or 9/16th inch, except for one limestone marble 18 mm in diameter, closer to 11/16th inch. This latter marble was likely a shooter marble, which usually were the largest and strongest marbles.

During the 19th century, there were marble completions between men, often associated with gambling, as well as children just playing marble games. Thus these clay and stone marbles could have been utilized by either the children of the officers or by the enlisted men at Belle Fontaine. Commanding officers such as Col. Bissell complained that the enlisted men spent too much time gambling as well as raising crops to brew for alcoholic beverages (Harl 1996:7), so gambling on marble games could have been a possible entertainment. However the earliest record of commercial clay marble production in the U.S. was not until 1818 or 1819 (Baumann 1990); most of the personnel had left the fort by 1826 for Jefferson Barracks in St. Louis, so this would be a very narrow window of time. Clay and stone marble continued in use through the 19th century, until replaced by glass marbles in the early 20th century, so these clay and stone marbles possibly might have been lost by the Tandy boys as well.

**Military and Non-military Buttons**

(with report assistance from Ronald Hampton, Brian Tyler, and Annie Way)

To help identify the military button assemblage, the lab turned to the illustrations and descriptions of the uniforms of the period. In 1810, a single-breasted coat with 10 main buttons replaced the old double-breasted Continental Army-style coat. Regulations specified that this new ‘coatee’ or ‘great coat’ was to have 10 buttons on front, and also four on each cuff. The buttons of the front were termed ‘main’ and measured about 20 mm (1/2 inch) in diameter, while the buttons on the cuffs were termed ‘auxiliary’ and measured about 14-15 mm (3/8 inch) in diameter. The number of buttons on the uniforms varied over time as well as army unit; sometimes having as many as 14-15 main buttons, and 16 auxiliary buttons, sometimes fewer. It is not clear from the sources reviewed how many buttons would have been typical on the coats during the period of 1810 to 1830, particularly as there were different units and some style change. Based on lab research results, I would surmise an estimate of 10 main and at least 8 auxiliary buttons per coatee would seem likely. This is one factor which makes it clear that a simple button count will not provide an accurate picture of the troops at Belle Fontaine.

Buttons were of two metal types: pewter (termed white-metal) which were generally about 80% tin and 20% lead, typical of those for the coats of enlisted privates, and brass (termed yellow-metal) of about 15% zinc and 85% copper, typical for higher rank staff members. The pewter buttons from Belle Fontaine had the design stamped onto the button after it was cast, as opposed to using a mold for the button design. Because the second iteration of Cantonment Belle Fontaine was only intensely occupied for 17 years (1810-1826), during this period the type of shanks on the back of the button did not change in any temporally important way. This was fortunate because most of the buttons in the collections had lost their shanks. The few shanks
remaining were those with ‘cast eyes’ and ‘included eyes’ types, which were very typical for buttons manufactured between 1800 and 1830, so are of little utility for assigning any narrower date ranges for the buttons at the Cantonment.

About half of the buttons recovered from Belle Fontaine were pewter or white-metal Infantry buttons. According to Tice (1997:57), William Crumpton Company of New Jersey and Pennsylvania manufactured a majority of the pewter buttons for the army from 1807 to 1822. Leavenworth, Hayden, and Scovill of Connecticut also manufactured buttons of both types; there was one recovered brass Belle Fontaine Artillery button, from the 3rd Regiment, which has a Leavenworth, Hayden, and Scovill backmark. The majority of the Infantry buttons were marked with a script “I” design for Infantry, with eagle motifs being the second most frequent Infantry design. The one Infantry officer’s button recovered was also pewter but was additionally silver-plated.

Although Riflemen were nominally in separate companies, during the War of 1812 they were usually integrated into the Infantry, thus being viewed as part of infantry regiments. However riflemen maintained their own uniforms, and their buttons were marked with the design “RR” at first; by the end of the War of 1812 the logo now also had a bugle surrounded by stars and contained the regiment number (Johnson 1948, 1:60-61). The number of stars on the Belle Fontaine examples are either 13 or 15 stars above. All the Riflemen button examples from Belle Fontaine are yellow-metal or brass, rather than white-metal or pewter, marked 1st and 3rd Regiments, and R.R. (Rifleman Regiment).

Artillery men also had their own uniform, with their own brass button style. There are considerably more Riflemen’s buttons than Artillery ones, which does not square with one writer’s previously proposed staffing report, although intuitively it makes more sense to me. But as noted above, the number of buttons recovered is not a good measure of the number of soldiers in any unit. The need for Artillery in the Midwest was so low that Artillery soldiers often were used as Infantry (Urwin 1988:520). Belle Fontaine artillery buttons were marked either “A” for Artillery or “LA” for Light Artillery. A couple of the Belle Fontaine artillery buttons had a cannon with an eagle perched on the cannon barrel in front of a stack of six cannonballs, with either “A” or “Corps” at base of the cannon.

There were a total 73 military buttons recovered which could be identified to specific unit, but only two of these were officers’ buttons. One of the few possible post-1820 buttons from the Belle Fontaine collection was a General Staff Button, a button thus from one of the officers at the fort. The rest of the military buttons described here are all of styles which seem typical for the period of 1810-1826.

The Fort Belle Fontaine examples of main coat buttons of infantry, riflemen, and artillery were all 20-21 mm (1/2 inch) in diameter; the cuff or auxiliary buttons were smaller, measuring 14-16 mm (3/8 inch) in diameter for all three services. The military buttons identifiable to unit were as follows:

- Infantry Main Coat Buttons (n = 24), with 1st, 3rd, 5th, 6th, 7th, and 11th regiments indicated.
- Infantry Cuff or Auxiliary Buttons (n = 11), with 1st, 2nd, 3rd, and 7th regiments indicated.
- Riflemen Main Coat Buttons (n = 17) with 1st, 2nd, 3rd, 4th, and 5th regiments indicated.
- Riflemen Cuff or Auxiliary Buttons (n = 10) with 1st and 5th regiments indicated.
- Artillery Main Coat Buttons (n = 6) with 1st, 2nd and 3rd regiments indicated.
- Artillery Cuff or Auxiliary Buttons (n = 4) only with an “A” inscribed on the cannon with the eagle on the barrel and six cannon balls.
- General Officer button. (n = 2) The one clear officer button was a silver-plated main coat button, with logo of circled eagle with star in center and spade-shaped shield on the left side, like later Infantry designs, with United States around the perimeter, from the 1820-
1826 period. There was a second main coat uniform button with interlocking USA and US which one source suggested was an ordinance officer’s button from the 1784-1799 period. If correct then this button was lost by someone who had been in the service during the Continental Army period.

The button information suggests that at least seven Infantry companies served at Fort Belle Fontaine at some point from 1810 to 1826. In 1810-1812, there were buttons from the 2nd and 6th Infantry. After 1812, infantry buttons from the 1st and 3rd, and then others such as the 4th, 5th, and 7th appeared. The 2nd Infantry button pictured an eagle over the regiment phrase “2 Rt”; the 6th Infantry had the words ‘United States’ surrounding the number 6. Shortly thereafter infantry regiments at Belle Fontaine had a new button style, now with the marking ‘U.S.’ By the end of the War of 1812, the Infantry buttons at Belle Fontaine had the script ‘I’ motif over a star enclosed in an oval; one company had a five-pointed star and another a six-pointed star. And shortly later one of the companies had buttons where the star had been replaced by what has been called a ‘mullet’ (defined as a design resembling a shooting star with a round hole in its center). About 1820, another infantry company at Belle Fontaine switched its button style from the script ‘I’ motif to one featuring an eagle holding this ‘I’. The only surviving Infantry officer’s button belongs to this design set. Another late button has an Eagle with an ‘I’ on a spade-shaped shield with 7 in it. (Button dates in this paragraph estimated from the dates in the David Johnson’s 1948 book.) The sample of buttons recovered may not cover all of the troops ultimately at the Cantonment; in addition to the 1st, 2nd 3rd, 4th, 5th, 6th and 7th Regiments, there are references to the 8th, 11th and 24th Regiments as well as other units being temporarily stationed at the Cantonment (Billon 1888:92-94, 393; Norton 1911:336-337).

While, as noted above, there were 73 military buttons identifiable to unit, altogether there were 114 military buttons recovered. But only the 73 previously described were sufficiently preserved to identify unit; the other 41 military buttons were too corroded to identify unit. In addition to these 114 military buttons, there were also 38 other buttons recovered, or 152 buttons in all were identified. The 38 non-military buttons included 10 shell buttons, 15 bone buttons, and 13 ceramic/porcelain buttons, all typical of post-1800 varieties. Except for the porcelain examples, there were no clear diagnostics to more narrowly date anything further. The bone and shell buttons might have derived from the officer’s families living at the post, or buttons on troops’ underclothing. The 13 ceramic/porcelain buttons likely derived from the subsequent farm households living on the old Cantonment grounds, as a some of them were gilt-plated or had the word ’Rich’ as back-marks, button types most frequent post-dating 1840.

**Weaponry (Lead and iron shot, gun flints, bayonet)**

(with report assistance from Myla Coffie, Kelly Gelpi Rui Guan, Lauren Hunter, Bobby Kahlon, Nick May, Bryan Miller, Ryan Newberger, Ray Nichols, Christine Simurda, and Joy Wang)

In 1808, during the time of the first iteration of Belle Fontaine, the Army issued each new soldier 1 coat, 1 musket, 1 ramrod, 1 bayonet, 12 musket cartridges, and 2 gun-flints. With the onset of the War of 1812, at the second iteration of the Cantonment, materiel issued were increased, but were generally similar. Recovered Cantonment weapon artifacts would thus likely be expected to include lead shot, gun-flints, and possibly metal items from the guns themselves. Based on the discussions in Peterson (1956), Russell (1959), Wyckoff (1984), and the Quartermaster Correspondence, the armaments recovered at the Cantonment were predicted to come from four types of weapons: pistols, muskets, rifles, and six-pounder swivel or wall guns. Except for the swivel wall guns, all the ammunition used was lead shot.

Regular army enlistees were issued muskets, so it was presumed that items related to muskets would be the most common type of weapon evidence recovered. The United States
Army adopted the smooth bore French Musket Model 1763, which when it was officially first made by the new American government was known as the U.S. Musket Model 1795, frequently known as the ‘Brown Bess’, which used 0.69 caliber musket balls. This musket went through some upgrades in the time of Cantonment Belle Fontaine to the U.S. Model 1812 and U.S. Model 1816, but still used the same caliber ammunition. The bayonet for the musket was 16 inches in length, with a triangular cross-section.

The period musket had a usual killing range of about 125-150 yards, and depending on the skill of the soldier, accuracy of perhaps as little as 50 yards, although 75 yards was the average. One might think that because the musket was less accurate and had a more limited distance range than the rifle, that the superior range and accuracy of the rifle would immediately make it a better troop weapon. However initially the musket was easier to reload, and a typical soldier could load and shoot three rounds a minute for a musket vs. one round a minute for a rifle. Thus musket-armed soldiers would theoretically bring three times more fire power to the battle. (This comparison is true for War of 1812 period weapons, but not later models). In addition the muskets had a bayonet attached to the barrel for close in-fighting, as contrasted to the early rifles which lacked bayonets (but by the War of 1812, rifles usually had bayonets as well). And of course it took greater skill to fire the rifle with the accuracy required, so the rifle required more training than the musket. All these factors led to the fact that the bulk of the infantry fighting troops during most of the 1805-1826 period were armed with muskets rather than rifles.

Riflemen were issued the U.S. Army flintlock rifles, which used 0.54 caliber ammunition. The barrel had an internal rifled bore with spiral grooves causing the bullet to spin to make it more accurate. As noted above, the early rifle version lacked bayonets, and took longer to reload, an average of one minute for each reload, as compared to an average of only 20 seconds reload for a musket. Riflemen at the time were said to have good accuracy for a considerable further distance than the musket users, up to 200 yards with early models, further with later models. In 1817 an upgraded long rifle (a modified Kentucky Flintlock or Firelock Rifle) was adopted by the Army, now with bayonets and even greater listed accuracy. And in 1819, the Hall Breech Loading Rifle was adopted, dramatically reducing reload time.

The pistols, which only officers had, were smaller smooth-bore weapons like the muskets and often used 0.69 musket caliber ammunition in earlier models; later models switched or added the 0.54 caliber. The Model 1799, which was mentioned as being available to the Belle Fontaine officers, used a 0.69 caliber bullet; also using 0.69 caliber were later models such as the Model 1807, Model 1813, and Model 1819 which would have become available as they were added to the inventory. The Model 1806 was apparently the first to use 0.54 caliber rifle ammunition, but it seems that it was not until the Model 1817 that 0.54 caliber pistols became common (Russell 1957:200-220).

There were two smooth-bore swivel wall guns mentioned as being deployed in the second iteration of the Cantonment, one each at the two corner block houses. Such wall guns were typically of bore of no more than 1 ½ inches. Because these guns often were loaded with six one-pound iron balls, clustered like grapes in a cloth sack for easy loading, the iron shot was often called ‘grape-shot’, and as noted earlier, thus the swivel gun was called a ‘six-pounder’. Swivel gun loads also at times simply included scrap iron of the appropriate size. The intent of the swivel gun grape-shot load was not accuracy as much as it was more scatter-shot like a shot gun. These wall cannons or swivel guns were designed to shoot multiple such grape-shot rounds to cause general fear and carnage (Russell 1959:258-259).

The 1805-1826 period pistol, musket, and rifle all used gunflints in their firing mechanisms. Two varieties of gunflints were commonly in use at the beginning of the 19th
century: English and French. The English packed their finished gunflints into tubs or sacks, which were exported from England in casks holding 2,000 to 4,000 gunflints. These English gunflints were of nearly black semi-translucent to gray opaque colored fine-grained flint. The French gunflints were honey-yellow to blond flint with fine-grained white inclusions or whitish chalk cortex rinds. U.S. Army gunflint inch size specifications were (small to large): .41-.71 wide, .39-.55 long, & .30-.42 thick for pistol gunflints; .79-.88 wide, .97-1.20 long, & .21-.27 thick for rifle gunflints; and 1.08-1.13 wide, 1.20-1.50 long, & .26-.33 thick for musket gunflints (Russell 1957:343). There were 17 recovered gunflints in the work at Belle Fontaine: 13 of the blond French type and 4 of the British black/gray variety. There was so much damage to the gunflints and so much overlap in size that many of the lab analysts were reluctant to say more than there were clearly half a dozen mainly complete rifle and musket-sized gunflints, at least one complete pistol-sized gunflint, and the rest were too fragmentary to definitively categorize, although because of putative width and length measurements, some of the analysts tentatively limned them as a total of 13 rifle and/or musket gunflints and 4 pistol gunflints.

Russell (1957:241) said the military expected the soldiers at the period to need to replace the gunflint after 20 rounds, so soldiers were issued one gunflint for every 20 rounds. Modern re-enactors (Steve Anderson, personal communication 2005, Fort des Chartres State Historic Site, Illinois) say that amateurs may get 20 shots, but some experts might get up to 50 rounds per gunflint before it was exhausted and replaced. Indians and fur trappers out on the frontier often were not close to armories like Cantonment Belle Fontaine, and thus sometimes had to manufacture their own replacement gunflints from various American cherts and flints found locally, but that was not the case for the troops at Belle Fontaine.

The majority of the lead ammunition shot recovered at the Cantonment excavations came from three of the four types of armaments utilized there: pistols, muskets, and rifles. The wall-guns utilized iron grape-shot, and two examples of one-inch grape-shot iron balls were recovered. Expected lead shot size was 0.54 and 0.69 for the pistols, rifles, and muskets; yet the actual 29 examples of recovered lead shot included 14 examples of buckshot (.32 caliber), 11 examples of rifle or pistol shot (.54 caliber) and only 4 examples of musket or pistol shot (.69 caliber). These archaeological lead shot finds fit the expected pattern with one notable exception – the occurrence of more buckshot than any other kind of single kind of lead shot. This was particularly unexpected as there was a size-bias in the screening recovery method which likely led to a bias in finding mainly various larger sizes of lead shot. Nothing was said in either Harl’s or Railey’s reports about this issue, but one of the field students said they used 3/8th inch mesh hardware cloth for the screens, which would only prevent anything larger than 0.95 mm from passing into the back-dirt. Another excavator comment suggested that some of the screen mesh may also have been smaller, of only ¼ inch mesh, which would have only prevented items larger than 0.64 mm from dropping into the back-dirt. Therefore lead ammunition balls which were smaller than these two limits might likely have passed unnoticed into the backdirt, so there was a predicted bias toward recovery of larger size lead shot. Screen mesh size utilized would have suggested recovery of more musket shot than smaller shot, and particularly little recovery of any buckshot-sized lead shot.

As noted, recovery of rifle, pistol, musket and even the swivel-gun grape-shot all generally conformed to expectations based on the military units and arms reported at Cantonment Belle Fontaine. However, the unexpected recovery of nearly half of the lead shot being ‘buckshot’ gave me pause. The laboratory analysts had all presumed that it must have come harquebuses/arquebuses or blunderbusses, even though none were mentioned in any reports or correspondence as being among the weaponry of the regiments at the Cantonment. This type of gun was typically fired from a tripod by the late 18th century (earlier ones were
hand-held smaller stock sizes), so if any tripod mounted blunderbuss versions were at Cantonment Belle Fontaine, they surely would have been noted in period reports if they had been there. Thus, where did the buckshot-size shot come from? I did note two different gauge more recent shotgun shells were recovered and wondered if maybe they were the source. But some of the lead buckshot had come from undisturbed context at the very bottom of the root-cellar in excavations by both Harl’s crew and Railey’s crew, which should mean it predated 1836. In addition, the Cantonment buckshot-size lead shot, as near as could be ascertained without trace-element analysis, seemed identical in composition to the pistol, rifle and musket shot, even to having the same corrosion patina from exposure. And further, the buckshot size recovered was wrong for any buckshot from the more recent [post-Civil War] 10-gauge and 12-gauge shotgun shell casings recovered (see below), before lead shot was banned. So it appeared that the .32 caliber buckshot was indeed Cantonment contemporary.

Going back to the literature, I found that blunderbusses were loaded with a wide variety of shot sizes, from pellets even smaller than .32 up to shot 1 inch or more. Lewis and Clark’s 1804-1806 expedition had included one sole blunderbuss in addition to the multiple expedition muskets and rifles, but their crew only used it rarely; it functioned essentially like a modern shotgun. Being contemporary, that might suggest that a blunderbuss could possibly have been at Belle Fontaine. However as noted above, there was no mention that blunderbusses were ever among the weapons utilized at Cantonment Belle Fontaine. But discussion of period weaponry reported that as blunderbuss use declined and was phased out, the United States military began the practice of loading one or more smaller lead shot (buckshot) in conjunction with the larger musket or rifle ball for both musket and rifle loads, in a combination known as ‘buck and ball’. The official military buckshot size for ‘buck and ball’ was hard to find in my references, but finally I did find one source which identified the size as being .32 caliber.

This ‘buck and ball’ load was used extensively by American troops during the War of 1812, particularly in the Battle of New Orleans. The advantage of the ‘buck and ball’ load was that with the addition of the buckshot to a musket or rifle ball load, one of the fired projectiles had a greater chance of hitting the enemy, thus taking wounded soldiers out of a fight. The disadvantage of this load was that the buckshot did not cause as severe wounds as musket or rifle shot at longer ranges. Contemporary accounts of the War of 1812 reported that many of the British troops wounded by buckshot from the ‘buck and ball’ load, instead of the musket or rifle ball, recovered quickly as they had been struck by the smaller and lighter shot and soon returned to the fight. The maximum military use of Cantonment Belle Fontaine was during the epoch of the War of 1812, so the explanation of the number of .32 caliber lead buckshot at the site seems evidently linked to the ‘buck and ball’ practice of the military units at the time, an armament practice not previously identified for Cantonment Belle Fontaine.

One badly rusted triangular cross-section bayonet of nearly 16 inches length, typical of bayonets used on muskets, was found during Belle Fontaine excavations as well. It was located in debris at the very bottom edge of the limestone wall on the south side of the root cellar under the administration building (Figs. 7 and 10). This fortuitous somewhat concealed location likely explains why an artifact of this size was not seen and moved to the St. Louis Armory when the Cantonment was decommissioned, and thus remained to be recovered by the archaeological field crews.

Also there were a few shell casings from shotguns and different sized modern rifles recovered in the five field seasons. These included four shotgun shells of 10-gauge and 12-gauge, and three modern rifle cartridge shells (two from .38 caliber and one from .22 caliber), all post-dating 1870 or later.
Glass (Window panes and glass containers)
(with report assistance from Ian Kalish, Sarah Keast, Amy Kramer, Jane Lucas, Ryan Nelson, Kathleen Stahlman, Sam Steinberger, and Tim Stinson)

Glas recovered in the Belle Fontaine archaeological operations derived principally from three categories: window glass, bottles, and other glass containers. With the reference to the requests in 1810 from the Cantonment staff to the War Department relating to the building of the second iteration of the facility, we know that construction was expected to include two windows each of 15 panes for about 15 structures, and one window of 12 panes for another 20-25 buildings, or possibly as many as 750 panes of glass. Window glass at the time for such rural structures as the Cantonment would have consisted of glass that likely would exhibit various air bubbles and wavy lines or striations from its fabrication process. In addition, panes of early 19th century glass usually did not have chemicals added to eliminate the slight blue-green tint that often occurred during the period glass manufacture from utilizing untreated sands. Thus Cantonment period window glass was expected to have a slightly different character than any window glass from the Tandy farmstead building or from the Boys Home buildings.

Out of 8,321 pieces of glass from the three years of Harl’s excavations and the first year of Railey’s excavations (Railey’s second year was not analyzed for window glass), nearly three-quarters or 6,127 pieces were flat window glass. However by far the greatest majority of the window glass lacked the imperfections and the blue-green or aquamarine color tint typical of early 19th century glass, so the analysts concluded that almost all of the window glass seemed to be late 19th century or 20th century window glass fragments. One earlier reference commenting on the decommissioning of the Cantonment had referred to both hardware and glass being salvaged from the site by local farmers after it was abandoned, so this might help explain the lack of Cantonment period glass. Sometimes early historic 19th century window glass also had a slightly different thickness than later window glass. But in a couple runs of test samples the lab workers detected no consistent identifiable difference in glass thickness, so opted not to continue measuring small (dime and penny size in the majority of cases) window glass fragments for thickness parameters. The miniscule size of the fragments also meant that it was impossible to ascertain any estimate for the ‘pane’ or ‘light’ size of the Cantonment glass utilized. The conclusion of examination of window glass was that although there was a small amount of 1810-1826 period window glass, by far the greatest majority was later farmstead or Boy’s Home period broken window glass.

The bottle glass and glassware containers from the first four seasons included both Cantonment period, and later, likely mainly farmstead, period examples. Of particular relevance to the fort occupation period were fragments from about a dozen dark olive-green colored glass bottles, which because of the glass thickness appeared almost black, which were typical of period alcoholic liquid bottles. Several fragments of these bottles were recovered from the Cantonment period root cellar, including two nearly whole bases - bases which were not completely or perfectly symmetrical but varied in diameter from 8.8 to 9.1 cm. (3.46-3.58 in.), a width variation often typical of hand-blown bottles. This dark olive-green bottle glass had variable thickness, and also contained air-bubbles of variable size, typical of such hand-blown glass.

The bases of hand-blown glass bottles for alcoholic liquids of this time period often display what is called a ‘pontil mark’, a mark which derives from the rod positioned opposite from the blowpipe, which was used to hold the bottle while the bottle was being blown. The bases of the dark olive-green bottles from Belle Fontaine also displayed a push-up or kick-up, which was essentially the center of the base of the bottle pushed up into the body of the container by the pontil rod after the bottle was blown to size. This kind of push-up or kick-up shape today is often a signature of wine bottles. It was also typical of alcoholic beverage bottles of the early
19th century. The reasons given for the kick-up or push-up are variable: some argue that it gave stability to the bottle, others that it more evenly distributed the glass, and still others prefer other explanations. The precise reason for this feature is not relevant to this study; rather it is the fact that it is a diagnostic of such early 19th century hand-blown alcoholic beverage bottles. When the pontil rod was cracked off/broken off/removed from the kick-up or push-up of the bottle after it was blown at the glass-blowing shop, there will be evidence remaining which will tell us whether the pontil was an iron rod, a glass rod, or perhaps was a rod with a sanded tip to ease the removing of the juncture of bottle and rod. The two good examples of bases from Cantonment Belle Fontaine have one sand-tipped pontil scar and one glass-tipped pontil scar.

There were some bottle neck portions of the same dark olive-green glass, showing hand-lipping of the bottle mouth. The top two-thirds of one such dark olive-green bottle (Fig. 11) was reconstructed from fragments; it shows that the bottle had been used in target practice, as it is possible to see where the shot enter and left the bottle, obliterating those parts of the bottle. Such dark olive-green, seemingly nearly black, glass fell out of popular favor after 1850. I suspect the bottle used for target practice was one recovered from the refuse and shot at later by the later Tandy farmstead boys, rather than at the Cantonment period. Re-use and re-cycling of bottles was a ‘fact of life’ back in the early 19th century and it seems unlikely the soldiers would have used a bottle for target practice, particularly because they were making their own home-grown brandy and beer and needed recycled empty bottles.

Lab workers also reconstructed other bottles from the field collections of the first four seasons. The majority of these bottles came from later occupations. One was a dark blue medicine bottle, of a type used for medicine after the mid-19th century. Another had the words “Old Rye” in a raised oval, broken off with the feet of a person standing on the oval, with the design clearly a fragment of the typical “Pikes Peak” alcoholic flask, most popular from 1859 to 1875. Part of a brown colored beer bottle was reconstructed, possible a variety not seen until the 20th century. A Mason jar was partially reconstructed, not enough to ascertain exactly which variety, but one clearly post-dating the Civil War. A ‘Sloan Nerve and Bone Liniment’ jar, with the kick-plate logo of ‘Dr. E. S. Sloan, Boston, 1890’, was found. Later bottle pieces which exhibited fluid ounces stamped on the bottom dating after 1867, and a piece with November 2, 1887, on the bottom, also were recovered. A machine-made, snap-case bottle with the IGCo logo of the Ihmsen Glass Company, Birmingham, dating to 1876 to 1883 was recovered. A variety of other semi-automatic and automatic machine bottles with seam-lines were found. Some Pepsi Cola soft-drink bottle fragments were partially reconstructed.

In the fifth season, the second of Railey’s supervised excavations, crews collected materials from a new waterline trench excavated that year by the Division of Youth Services contractor along the loop access road in front of, or just north of, the original fort. While 2,194 pieces of glass containers and glass bottles had been recovered in the first four seasons, an additional 1,145 pieces of bottle and glass container glass came from the last season or a total of 3,339 pieces of glass bottles and glassware were in the lab samples. Unfortunately the glass from the 5th or 1997 season, particularly from this waterline excavation, was mainly late 19th and early 20th century glass containers. For example, from the waterline excavation, there were mold-made bottles and other bottles made from late 19th and early 20th century semi-automatic and automatic bottle-making machines. There were several fragments of 20th century Pepsi Cola bottles. Makers marks on other bottle bases included an “I” inside of a diamond, the logo from the Illinois Glass Company of Alton, a patent mark registered for the period of 1915-1929. There were pieces labeled with the trade name “Durglas”, made by Owens-Illinois after 1929. There was one bottle base with the logo ABGM, Adolphus Busch Manufacturing Company, a logo registered from 1886 to 1928. The majority of all the more diagnostic bottles
and bottle pieces came from this waterline excavation, including medicine bottles, Mason jars, milk bottles, soft-drink bottles, beer bottles and other alcohol bottles. Preliminary research showed that the waterline trench assemblage thus appeared to have dated mainly to the Boys Home occupation, likely ending with the 1936 to 1940 WPA site contouring activities. Hence, although the waterline assemblage included a rich glass container inventory with many identifiable logos, no detailed analysis of this assemblage was made because, as noted before, the focus of the research was upon identifying materials from the Cantonment occupation period of 1805 to 1826.

And for the last glass category, the other non-bottle glass containers, much of the rest of the glass fragments from all five seasons also seems to derive from the farmstead period or later. There were a number of pieces of pressed-glass bowls with scalloped edges and fragments of pressed-glass drinking glasses. Pressed-glass was patented in 1825 and was particularly popular from 1850 to 1900 as the poor-man’s substitute for cut-glass, the time period of the Tandy and Leathe farm households. Thus while the dark olive-green bottles were relics from the Cantonment period, a major portion of the glass bottle, glass container, and window glass evidence from the archaeological collections of the excavation seasons post-dated the Cantonment occupation and seemed more characteristic of the latter half of the 19th century and early 20th century.

Plain Ware Ceramics
(with report assistance from Rachel Boyarsky, Tiffany Bruckert, Robin Machiran, and Jessica Straatmann)

The majority of plainware ceramics recovered were earthen-redware and stoneware. For the most part they were fragments of storage containers, although there were also some sherds from serving dishes. There were two excavation localities with large amounts of these plainwares: for the 1992 through 1996 seasons, there were 212 unglazed and glazed redware sherds, mainly associated with the excavations adjacent to Tandy’s limestone-foundation farmhouse, and for the 1997 season there were another 281 plainware sherds, mainly stoneware, from the barn or stable area, and from the waterline survey. The lab students followed the red and stoneware typologies defined by Frye et al 1991, Ketchum 1991, and Ramsay 1947, identifying primarily brown slate and mottled brown and black glazes for the redwares; there were lesser amounts of unglazed, clear lead glaze, and black lead glaze redware and stoneware for the first four seasons. The redwares were mainly associated with various large open-mouthed storage jars; the stonewares were more often flat serving dishes such as plates and saucers as well as enclosed jars. In addition, there were 17 pieces of prehistoric period ceramic sherds, not unexpected as there were some late prehistoric sites identified on the bluff just slightly south and uphill from the Cantonment (see Fig. 1).

The redware storage containers sherds were often frustratingly generic: the few vessel shapes identifiable and the glazes seemed to be often similar to both Cantonment periods and later periods. As noted, much (but not all) of the redware came from near the Tandy farmhouse. Thus while the part of the redware could also be Cantonment-contemporary, the stoneware was mainly post-Cantonment in manufacture. This created a bit of a conundrum. I liked the idea that Railey proposed to the lab students that the barn or stables he had identified in the area east of the Cantonment would have served the Cantonment; clearly the horses and oxen that were at the Cantonment had to be housed somewhere. But troubling for that hypothesis was the fact that the ceramics recovered from the barn or stables area were mainly stonewares which post-dated the fort occupation. On the other hand it would be certainly possible that the barn or stables were constructed for the Cantonment, and then continued to be utilized extensively later. In my
work at the Bates-Thornhill historic property only a short distance up the Missouri River in the Chesterfield area (Browman 1974 and other research reports for the county park system not listed), I found that the original barn was constructed before 1820, but that much of it was still functional and had been adapted as an automobile garage when St. Louis County Parks department took over the estate as a historic site property in the latter part of the 20th century. In light of that evidence, it might not be unreasonable to suggest that the same Belle Fontaine barn/stables could have functioned in both Cantonment and farmstead periods. Further work is needed to ground-truth that idea.

Others of the stoneware sherds recovered at the Cantonment area itself were clearly late. There was an ironstone bowl fragment with the back mark “Shenango, New Castle, PA”, a pottery firm only in existence in 20th century. There was a stoneware crock sherd with an Albany slip with a cobalt blue stencil labeling it as “Little Rock” which must thus be post-1843 (Ketchum 1991:15). There was a plate sherd back-marked Greenwood Pottery, Trenton, NJ, which post-dates 1861, very similar to illustrated types from 1887. There was one set of potsherds of Rockingham Yellow Ware, apparently from a single vessel, found in the waterline trench collections in 1997, a location which had a variety of late items as well as early ones. This latter ware is generally dated to a broad range from 1830 to 1930.

Among the stoneware finds were two nearly complete bottles, which like the stoneware at the stables caused some differences of interpretation. One of the stoneware bottles came from the mixed refuse in the administrative building root cellar structure, and the second which was marked “Blacking Bottle” (Fig. 12) was found near the limestone house foundation of the Tandy residence structure according to the information in the excavation notes, although it was erroneously conflated with the first bottle in Harl’s report. While it would be tempting to associate this second stoneware “Blacking Bottle” from the Tandy house area with possibly the need for blacking uniform leather for soldiers at the fort, and to also associate the first stoneware bottle from the 1810-1826 root cellar with the fort rather than later farmstead period refuse dumped into the root-cellar hole, the sources used in the lab report that the first stoneware kiln in Missouri was in 1839, and that stoneware bottles were not widespread in Missouri until ca. 1860 (for example, Ketchum 1991:139). This makes positing that these two bottles were fort period artifacts, as Harl (1995:24) did, questionable at best; they seem on the evidence available to be more likely farmstead period artifacts.

**Decorated Ceramic Ware**

(with assistance from Jennifer Bonarek, Marco Brewer, Laura Downing, Emily Hollinger, Stephanie Kain, Meghan Kenny, Joanna Kovalski, Aimee Kryda, Juan Carlos Melendez, Alex Rechlin, Toi Saale, Kara San Joaquin, Kathleen Sipe, T. J. Silverman, and Nicole Vanore)

As the number of researcher names on the list here indicates, the decorated ceramics intrigued the neophyte analysts, and several of them focused their lab work on the small decorated fragments to attempt to determine ceramic styles and types. In theory, precise identification of the period of the manufacture of a ware and decoration type might allow shorter and therefore ‘better’ temporal periods of usage at the Cantonment. This would clearly help characterize the ceramic sherds recovered as ‘Cantonment period’, Tandy period’, ‘Boys home period’, and so on. In addition, if very specific decorative styles could be identified relating to the Cantonment, then it might be possible to compare the Belle Fontaine assemblage with other previous historic archaeological work done at places like Fort Madison and contemporary forts further up the Missouri River, to ascertain if the same set of ceramic types were employed in general by the army at this time, or if not and they were different, to try to work out the reasons for the differences.
As neophytes, the student analysts were learning how to identify pastes and decorative motifs and styles, so sometimes I received reports with quite different characterizations of the same ceramic piece or assemblage. The final lab authority had been designated to be Catherine Koziol. Not only had she worked as assistant field director on the Cantonment Belle Fontaine project for two years in 1996 and 1997, but she had submitted a preliminary research plan for a detailed historic ceramic analysis of the decorated ware for her Master of Liberal Arts thesis when, as she hoped, she would be admitted to the WUSTL University College MLA program. Regrettably, other circumstances interfered; she became pregnant, and after much soul-searching, decided not to pursue graduate work.

The Cantonment Belle Fontaine project recovered decorated-ware assemblage derived in large part from the attempts by the European ceramic potteries (and later American potteries which competed with the European imports) to re-create Chinese porcelains. The trade in Chinese goods particularly that the Portuguese merchants managed had resulted in imported Chinese porcelains being seen perhaps like today’s Cadillac or Mercedes cars, as the epitome of the decorated ceramics market. Because of the limited supply of such wares reaching Europe and its North Atlantic colonies, as well as their cost, access to these wares was very difficult. Fancier European table wares had originally been redwares with various spatter and colored-design glazes. But by the middle to late 18th century, English Staffordshire potteries had begun making a whiter slip, first with over-glaze and then later with under-glaze blue transfer print designs, which came to rather closely resemble the Chinese porcelains. Even though the ware itself was not yet of porcelain quality, European pottery artists could recreate, often by directly copying, the designs from Chinese wares onto the transfer prints which were applied to the European (and later American) pottery.

These what some detractors have called ‘ersatz porcelains’ were also produced then by other potteries, as that was what the market dictated. The earlier cream-whitish slip that Wedgwood is often credited as developing, was initially called Queens Ware, and then Cream Ware. To secure a whiter tint of the cream-color-slippered earthenware, cobalt blue was then added in following periods to create a whiter color (like bluing added in modern washers to obtain whiter laundry), and this was usually called Pearl Ware. The term White Ware thus often, but not always, is reserved for a kind of stoneware, such as Ironstone. Various project lab workers over the several years the ceramics were studied used nearly three dozen published comparative sources all told, but most frequently the sources employed were Frye et al 1991, Ketchum 1991, Majewski and O’Brien 1984, Ramsay 1947, Samford 1997, and Sussman 1977.

Different sources provided conflicting dates for various of the wares and decoration varieties. Sussman (1977:37) claimed that there was little if any ware difference between Cream Ware and Pearlware, that Pearlware was just new slip modified with cobalt blue added, on basic Cream ware. Majewski and O’Brien (1984:21) also noted the various disagreements between researchers on definition of cream ware, pearl ware, and white ware. The historic archaeology lab students then asked: Should we combine it all as ‘pearl ware’ or ‘creamware’ in line with what the consumers thought they were purchasing so that we were more closely studying what the actual consumers conceived as the product?, or instead, Should we try to make the distinction of ‘cream ware’ vs. ‘pearl ware’ vs. ‘white ware’ that historic archaeologists were making, as these distinctions could provide finer chronological markers? Because the transition to putting more bluing in the slip was frequently hard to clearly determine in the small-sized fragments, it was often difficult for the analysts to ascertain whether a tiny dime-sized or penny-sized sherd should be categorized as a ‘cream’, ‘pearl’ or ‘white’ ware. Thus various student analysts came up with different counts of ware types from the same ceramic assemblage. If there were sufficient decorations on the small sherd, it was often the design which helped define the
association. As well, some students tried looking at the ceramic assemblages from all five years of salvage work at the Cantonment (1992, 1993, 1994, 1996 and 1997), while others more intensely focused on perhaps one year, or a selection of two or three years, so the comparability of the results were even more difficult to see.

Using the references available, the later lab workers from the seminars created a very short abbreviated ‘cheat sheet’, employing the following wares and decoration features to characterize the ceramics that were relevant to the 1805 and later occupations of the Cantonment property, so that the lab analysts would all, hopefully, be employing comparable terminologies and categories, increasing the utility of their research. The dates were also arrived at by consensus. The below represents the general categories that the lab analysts were using for wares and dates, to differentiate potentially Belle Fontaine contemporary wares from the later wares.

Ware Types:
- Earthenware: generally undecorated red or brown wares for storage vessels, all periods
- Creamware: 1750-1820/1825
- Pearlware 1775/1780-1840 (Cobalt blue added to create whiter color slip; early types might have puddling or pooling of the bluing in the crevasses, observed in some of the Belle Fontaine samples)
- White ware 1820/1830-1900s (used for the red, brown, green under-glaze transfer prints; according to several sources basically pearl ware without cobalt in the slip so one could have other colors). White ware was not made in U.S. until 1840, earlier England. In part it represented a shift from glazed earthenware to glazed stoneware, later especially ironstone.
- Porcelain. Recognized as clearly a late 19th and 20th century fabricated ceramic variety in America, derived from earlier Chinese porcelains.

Decoration Types:
- Spatter, mocha, annular, sponge patterns, generally pre-1805.
- Transfer painted pearlware: 1787-1842 (Figs. 13-16)
  - Underglaze transfer black and blue 1810-1842
  - Underglaze red, green, purple, brown transfer 1830-1842
  - Two color: 1830-1842
- Flow blue: 1840-1855 (made by adding chloride to create the flow feature)

Decoration Designs:
- Transfer overglaze print: none seen yet in the Belle Fontaine collections.
- Transfer underglaze print “Chinoiserie” patterns: variably dated 1810-1850 earliest only blue pigments, with landscapes, willows, flowering shrubs, flowering bushes, pagodas, bridges, fish, figures in eastern garb (Fig. 13)
- Transfer underglaze print pastoral scenes, 1820s-1840s.
- Transfer underglaze print American building views, 1826-1842 (Fig. 14 and 15)
- Shell or feather edged designs (1783-1838) on creamware and pearlware:
  - Rococo 1784-1812, curved line 1802-1830, straight line 1809-1831, gilt edge post-1860 (Fig. 16)
- Sprig, berry, floral free-hand painted polychrome: later resurgence 1860s
- Hotel Ware. Early 20th century and later.
One of the graduate students taking the class, a professional researcher from the Guatemala National Museum, opted to employ the ‘type-variety’ approach utilized widely in Mayan archaeology that he had used for two decades in excavations in his homeland. He ended up defining two decorated ware type-variety clusters:

- Pearl Ware, polychrome type, green & brown variety
- Cream Ware, polychrome type, black & red variety

Both of these clusters as defined covered the entire period of the surface collections from 1805 to the 1930s. The student analysts had not considered an approach like this, so it was useful to help clarify how one might address type categorization. After discussion, this approach was rejected as useful by other seminar analysts, seeing it not being adequately sensitive to nuanced temporal changes in decoration and ware.

The lab researchers identified ceramics from all 19th century types using their list, except Japanese designs, and only a sparse handful from earlier creamware, which correlated with the evidence from other artifact genres. That is, that in addition to the Cantonment Belle Fontaine temporal period artifacts, there were ceramic styles from the entire 19th and early 20th centuries types. Thus it was abundantly clear that the essentially surface collection ceramics, as the materials had to be treated, were diagnostic of other occupations beyond the 1805-1826 period.

Various approaches were employed by the students to try to extract additional patterns. For the entire five years of field work, the count was 3,385 potsherds from decorated earthenware, creamware, pearlware, ironstone, and porcelain varieties, of which the surface decoration count included 133 polychrome, 921 bichrome, 1,345 monochrome, and 886 undecorated body sherds. For the first four excavation seasons, more than half of the ceramics were identified as deriving from pearlware and earthenware, thus likely or possibly Cantonment-contemporary. Focusing on the blue monochrome underglaze transfer print design assemblage from the first three seasons (the last two had not yet been processed at that point), one researcher identified rim, body, and base sherds from what he estimated were 26 cups, 110 plates, 26 bowls, and 15 pitchers or creamers. Unfortunately the fragments were so small that he was unable to ascertain if, for example, he was counting six plate fragments of the same diameter which might actually have come from the same plate, as six different plates. Nevertheless, his counts give a sort of ‘seat-of-the-pants’ general estimate of the types of vessels which likely were utilized during the Cantonment period, which in turn agree in part with the 1805 listings of ceramic plates, cups, creamers, pint bowls, and tumblers being supplied to the Cantonment trading factory, and by extension, to the first iteration of the Cantonment, and likely transferred to the second iteration of the Cantonment as well.

In terms of underglaze transfer print design motifs, there were multiple small fragments of Chinoiserie willow ware, most of which were too small to identify specific scenes, but at least some were large enough to provide good examples (see Fig. 13). There also were several examples of shell- or feather-edged plates (see Fig. 16), of types generally in use from 1805 to 1835, so likely Cantonment contemporary. There were a few good examples of pastoral scenes, which were manufactured both during the Cantonment period and somewhat later. One was the base of a small bowl or cup, with a back-mark “Stone China”, with a farm house in the center of the inside bottom, and with what appears to be a fox-hunting scene on the outside (Fig. 15).

A very large (for the site) transfer ware ceramic sherd with a pastoral scene generated considerable arguments (Fig. 14). The 17 cm. (6.7/8 in.) wide rim sherd was estimated to have come from a vessel with a mouth roughly 30 cm. (12 in.) in diameter. It had been found in the refuse in the root cellar excavations and had originally been identified as a ‘chamber pot’, with the field crew presuming it had been used as such by an officer at the fort. But the item was
decorated with a pastoral scene, of a style typical of the period from 1820-1840, which could mean it was either Cantonment contemporary, or post-Cantonment. The motifs along with the delicate rim border had repeated acorn and oak leaf decoration (Fig. 14) common to the pre-1830s period (Majewski and O’Brien 1984:35). The overall configuration of the rim and body decoration was such that the later lab researchers felt it would have been unlikely to have been used as a chamber pot but more likely employed a wash basin or wide-mouthed serving vessel by a Cantonment officer or his family.

Another transfer ware sherd (Fig.16) exhibited what might be a ‘country mansion”, which Majewski and O’Brien (1984:35) and Samford (1997:6) saw as a British or American View design, with production generally dating to ca. 1815-1840, so again it could be argued to be either Cantonment or post-Cantonment.

There was one base with the back-mark Adams Staffordshire, which would place its manufacture between 1820 and 1840, potentially either Cantonment or post-Cantonment period. Note that several of the transfer design print styles, although first popular during the period of Cantonment occupation, had persisted in popularity after the time of the fort abandonment, typically up to perhaps 1840 or so, which might make their association with the Cantonment occupation problematic. On the other hand, current evidence seems to document little or no reoccupation of the Cantonment area until the 1850s or later, so it seems highly likely that potsherds with these Chinoiserie and other under-glaze transfer print scenes, as well as the shell-edged wares, even though their designs might persist in use into post-fort periods, were from fort-contemporary vessel utilization, rather than being heirlooms of the Tandy or other farmstead period occupants.

While the majority of decorated ceramic wares from the first four seasons’ excavations were potentially Cantonment-related; there were several other white-ware ceramic sherds which clearly dated to later periods. For example, one was an ironstone fragment with lion and unicorn back-mark also listing it as a Burgess Burslem manufactured piece (Fig. 10); Burgess Burslem Stone china was made from 1850 to 1880. There was a sherd back-marked Royal Wettina Austria (Royal Wettina would mean it was made after 1850 and identifying it as from Austria likely then after 1890); another back-marked as ‘English Chippendale’ which would place its manufacture after 1913; and yet another with a ‘Davenport 1936 ‘back-mark. Thus the decorated ceramic inventory, although it was mainly dominated by ceramics which would have been typical of the Cantonment Belle Fontaine period, also did have ceramic examples from the Tandy/Leathe farmstead and the St. Louis Boys Home periods.

Final Remarks

This is a far too short report, based on the yet-unmet potential of the site and its evident importance for regional and national patrimony. The parameters of this report are dictated in part because this account just summarizes the subsequent analysis-based salvage work itself centered on attempting to recover relevant aspects of the five different abbreviated archaeological excavation seasons at Cantonment/Fort Belle Fontaine. The unfortunate circumstances and the reasons for the surface collection analytical treatment and hence the abbreviated format of this report are summarized in the section on Archaeological Investigations on pp. 17 to 25.

The Belle Fontaine Cantonment or Encampment was the first American military fort west of the Mississippi River, as the country began integrating the new Louisiana Purchase lands. There was a first, more dispersed levee-sited version of the Cantonment established in 1805, which rapidly decayed and disappeared into the river in only roughly a decade, with a second,
mainly enclosed version begun in a more secure bluff location in 1810, with the military post decommissioned in 1826, and the decertified facility finally sold as surplus property in 1836.

The archival documents indicate a much more primitive fort construction footprint than the previous romanticized popularized conjectures. Not until the War of 1812 were somewhat hasty and possibly temporary ‘pickets’ put in place closing spaces between one-story horizontal log buildings, finally enclosing the Cantonment facility at least temporarily.

The discussion regarding possible reasons why the building structures had such short use-life focused on the use of sycamore and cottonwood trees with their bark still on as principal construction materials laid directly on the wet ground.

Examination of a remaining partially restored late 19th century structure with limestone building features adjacent to the Cantonment area now clearly shows it was part of the Tandy farmstead house constructed with salvaged Cantonment materials and not a powder house, nor a block house, nor any other Cantonment structure. The remaining restored structure is the north half of the late 19th century Tandy farmhouse; and archaeological excavations around the structure demonstrated that it was not part of the original Cantonment, although the limestone most likely was salvaged and reused from the earlier Cantonment structures, most likely from the administration building.

Initial archaeological explorations in the evident 1810 encampment area located a root-cellar-like structure, lined with limestone walls, which was linked to a location under the west end of the Cantonment administration building. Some minor magnetometry and GPR testing were used to try to locate additional Cantonment building features, but with no additional results.

The subsequent field documentation of a stables or barn just to the east of the Cantonment proper, possibly dating back to the Cantonment period, covers an activity expected but previously not identified in period documents. Later estate inheritance records in 1875 mention a ‘large barn’ used by the Tandy family – was this barn the one found, or was the archaeological evidence that of an earlier barn/stables, or was it even a Cantonment barn re-used later by the Tandy family?

An examination of the shorter iron square-nail lengths used on the fort buildings as contrasted to the later farmstead and Boys’ Home construction in the same location but now utilizing steel wire nails showed a shift to longer nail lengths with the change from iron to steel nails.

A preliminary description of the zooarchaeological remains, distinguishing between the purchase-obtained sawn portions of pork and cattle, as contrasted to the local soldier hunting-obtained axe- and knife-butchered wild animals, birds, and fish, helps clarify the provisioning. A brief speculation of the importance of peach orchards and other plants in the home-brewing activities of the enlisted soldiers enriches the description of daily life and subsistence at the Cantonment.

The ceramic and glassware study is abridged because the necessary context data were not available, so the entire five seasons of field work were forced to be considered as one large surface collection, with Cantonment period glass and ceramics admixed with other glass and ceramic artifacts dating as late as the mid-20th century. Among the few clearly Cantonment glass items, dark olive green (appearing nearly black) bottles were utilized for alcoholic consumption. Various under-glaze transfer print decorated pearlware types were used for plates, cups, saucers, and bowls; earthenware vessels of undecorated varieties were used for storage.

An examination of weaponry-related artifacts recovered appeared to indicate access to more French gunflints than British gunflints, in contrast to some other studies from the time period which show the reverse at other contemporary locales. Lead shot recovered was buckshot, pistol shot, rifle shot, and musket shot; also there was some iron grape-shot for the six-
pounder swivel gun. The use of the ‘buck and ball’ shot load previously was not known for the Cantonment, but the shot-types recovered seem to indicate that it was very popular among the troops here. The identification of military units at the Cantonment was supplemented by a study of the military uniform buttons recovered from infantry, rifleman, and artillery units.

Some of the results could be perhaps predicted based on similar research at other early American forts in the Louisiana Territory. Some of the results relate to specific local features, such as the short use-life of the fort structures, and the diet and activities of the enlisted men. Some of the results deal with the description of the actual physical artifacts recovered, although only a few representative artifacts could be illustrated in the accompanying figures.

The evidence of the subsequent farmsteads developed on the abandoned Cantonment property, ultimately involving the Tandy and Leathe families, was explored. Particularly glass, ceramics, marbles, nails, barbed wire, and other items indicate a much greater impact of later occupation events than expected upon the Cantonment remains.

The sale and development of the land for a Boys Home for Troubled St. Louis City youths changed the land configuration. The subsequent modification of the property by Works Progress Administration activities in the late 1930s has seriously damaged the residual archaeological Cantonment context and remains.

* * *

I looked for recommendations for future work in the most recent field reports available but found none. Based on the concerns expressed by the student analysts who worked on the artifacts in the Historic Archaeology lab, upon the 1996 season report (no idea what the 1997 season reported as that was never made available to us), and on what I could extract from the bits and pieces of evidence available, the following issues are where we had questions and suggestions which we hoped could be addressed by further field work:

--Excavation around the furthest east Boys Home dormitory building constructed in the late 1930s would be productive. This structure is to the east of the Belle Fontaine root-cellar, and between it and the stables or barn area (which is about 400 feet east). The 1812 idealized plan of the Cantonment (Fig. 3) should be used to help determine the parameters of test excavations. The work by Jim Railey and his crew indicated that on the north side of the site there was extant buried apparently undisturbed Cantonment soil surface covered over and buried and thus preserved by the later WPA site reconfiguration work. In the 1996 field excavations that Railey’s crew conducted between the root cellar and the edge of Harl’s tests to the east, and also their own further tests further to the east, they indicated that this buried sloping Horizon-A soil evidence continued to show up repeatedly in the test-cut floor plat maps and the east and west side-wall profiles of the archaeological test units in this area. Based on the reports that we had access to, it appears quite possible that there may be adequate undisturbed portions of the northern part, or front part, of the original 1810 -1826 land surface yet surviving around this 1930s Boys Home dormitory structure which is located to the east of the Superintendents House, and also possible pristine deposits to the east of this brick structure. If so, if properly excavated and documented for the first time, new excavations might detect undisturbed Cantonment-contemporary soil sediments which could be analyzed by a variety of techniques derived from geoarchaeology, zooarchaeology, and paleoethnobotany, to enrich the understanding of daily life at the Cantonment. And these new test units should turn up military items, personal items, ceramics and glass dating only to the 1810-1826 era, which would finally make characterization of the Cantonment Belle Fontaine domestic styles straight forward.

--It appears to us based on the 1992, 1993, 1994, and 1996 reports that we had access to in our surface collection analyses, that the 1930s WPA work may well have obliterated the
original surface of the southern or back half or more of the Cantonment. Further excavation work in that area of the Cantonment seems unlikely to be productive.

--The evidence we have seen in the correspondence and excavations suggests that the Cantonment Belle Fontaine was simpler and more ‘frontier-like’ even in its second iteration than previous commentaries had imagined. The romantic Cantonment reconstructions created by Ron Brunnert for the Belle Fontaine Historical Society do not seem to be supported by the evidence that we could ascertain. It is our suggestion that when any actual reconstructions are attempted for public viewing and appreciation (we assume this is probably proposed as part of the future plans by the St. Louis County Park division which now manages the site), that the archival correspondence description of the actual construction as described in 1810-1812 quartermaster documents should be utilized to inform the more simple format of the Cantonment. Certainly reconstruction should not falsely create a vertical log stockade nor elaborate limestone buildings. A document and evidence-based approach would be much more ‘authentic’.

--Additional excavation at the barn or stables area might prove rewarding. We did not have access to the necessary 1997 field drawings or report, but from informal evidence it appears that the 1997 crew found both the west wall and the north wall of this structure and identified limestone footings for the major uprights which helped define the walls. At this point it seems clear that the stables or barn were used, or possibly re-used, by post-Cantonment farmers such as the Tandys. Additional work might help demonstrate whether the stables only date to post-1836 farmsteads, or whether the stables were Cantonment-built and persisted in use for the next century.

--Although not part of the Cantonment proper, a separate project should include compiling a list of all individuals once buried at the Fort Belle Fontaine cemetery according to Army records, in order to ascertain how many unmarked burials still remain and need to be protected.

References cited
(Particularly for the military units and for the ceramics studies, but also for all categories, many more references were used and consulted by the lab workers using our lab library and historical libraries in St. Louis than listed here. I have just included the most utilized or directly cited.)

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Illustrations

Figure #1. Location of Cantonment Belle Fontaine. Map from Harl 1995 shows location of the archaeological site, 23 SL 441, as well as some nearby sites.

Figure #2. Aerial map of the Boys’s home site and Cantonment, taken February 25, 1997. Cantonment Belle Fontaine, just south of the Grand Staircase to the Missouri River, just right of center.

Figure #3. The 1812 drawing sent back to Army Headquarters in Washington D.C., showing the idealized features of the second iteration of Cantonment Belle Fontaine.

Figure #4. The Tandy Farmhouse.
Top photo based on a drawing at the Western Historical Manuscript Collection, Thomas Jefferson Library, University of Missouri St. Louis.
Bottom photo of the same building, in Lindenbush 1979:26.
Note that the left half of the house was of wooden construction, the right half of limestone salvaged from the fort.

Figure #5. The remaining north half of the Tandy House.
Undated photo, taken in the late 1990s, showing the remaining northern half of the Tandy farmhouse (compare Figure #4), which is erroneously called the Powder House” which it is not.

Figure #6. Two story log building in a 1904 photograph, said to be at Fort Bellefontaine. Construction type appears to me to post-date the Cantonment and relate to later farmstead periods. (From Anonymous 1904)

Figure #7. Root Cellar under the Administration Building at Cantonment Belle Fontaine.
Field drawing from Railey 1996, unpaged.

Figure #8. Root cellar, east wall. Field drawing from Railey 1996, unpaged.

Figure #9. Unpublished field map showing location of the 1996 new excavation units provided by Catherine Koziol and Jim Railey. North is to the top. The root cellar, not drawn in, would be on the left of center side of the drawing, adjacent and just to the east of the building identified as “Sup. Res.” [Superintendent’s residence]. Stables or barn excavations are shown at east/right side of drawing, where the area is labeled “Jim Meiner’s clearing”.

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Figure #10. Presumed Cantonment artifacts. Top left is woman’s comb found near the administrative building excavations. Bottom is the bayonet which came from the bottom of the root cellar. Top right is the back-mark is from an ironstone plate found in the refuse in the root cellar, but which must post-date the abandonment of the Cantonment. No scale.

Figure #11. Stone-ware bottles. Top is the stone ware bottle found in the refuse of the root cellar. Bottom is the stoneware vessels found near the Tandy farmhouse, with an enlargement of the “Blacking” label.

Figure #12. Dark olive-green bottle Partially restored bottle, damaged by target practice, Cantonment contemporary.

Figure #13. Chinoiserie ware Two larger fragments of chinoiserie ware, possibly Cantonment contemporary.

Figure #14. Large pearlware bowl, showing rim and side decorations. Style appears to Pastoral or American building view, which should post-date 1826. Originally thought to be a chamber pot, later work suggested more likely a large serving bowl.

Figure #15. Pearlware vessel. Appears to show fox hunt on exterior, country mansion on inside, post-dating 1826.

Figure #16. Pearlware plates. Top figure appears to show rural plantation. Bottom figure two examples of feather or shell-edged plates.
Table: Very partial list of officers only who served at Belle Fontaine, limited only to those cited in the official quartermaster correspondence files from 1808 to 1820.

Lt. Ethan Augustus Allen (son of Green Mountain Ethan Allen)
Lt. Col. Daniel Bissell (to Brig. General)
Capt. Russell Bissell (later Major)
Lt. John Campbell
Col. Talbot Chambers
Lt. Eli B. Clemson (later Capt., Major and Lt. Col.)
Capt. Joseph Cross
Lt. Joseph Dorr
Lt. Thomas Hamilton
Capt. James House
Col. Thomas Hunt
Brevet Major S. W. Kearney
Lt. Hezekiah Johnson
Lt. Joseph Kimball
Lt. Alpha Kingsley
Lt. Col. Jacob Kingsbury
Capt. Benjamin Lockwood
Lt. Robert Lucas
Capt. J. S. McIntosh
Surgeon’s Mate Samuel McKee
Lt. Col. Robert Carter Nicholas
Capt. John O’Fallon
Capt. Simon Owens
Lt. Charles Pentland
Lt. George Peter
Capt. Joseph Phillips
Capt. Zebulon Pike (to General)
Capt. Ninian Pinkley
Capt. Horatio Stark
Lt. John Clever Symmes
Gen. James Wilkinson (to Major General)
Capt. John Whistler (to Major)
Figure #1. Location of Cantonment Belle Fontaine. Map shows location of the archaeological site, 23 SL 441, as well as some nearby sites.
Figure #2. Aerial map of the Boys’s home site and Cantonment, taken February 25, 1997. Cantonment Belle Fontaine, just south of the Grand Staircase to the Missouri River, just right of center.
Figure #3. The 1812 drawing sent back to Army Headquarters in Washington D.C., showing the idealized features of the second iteration of Cantonment Belle Fontaine.
Figure #4. The Tandy Farmhouse.
Top photo based on a drawing at the Western Historical Manuscript Collection, Thomas Jefferson Library, University of Missouri St. Louis.
Bottom photo of the same building, in Lindenbush 1979:26.
Note that the left half of the house was of wooden construction, the right half of limestone salvaged from the fort.
Figure #5. The remaining north half of the Tandy House. Undated photo, taken in the late 1990s, showing the remaining northern half of the Tandy farmhouse (compare Figure #4), which is erroneously called the Powder House" which it is not.
Figure #6. Two story log building in a 1904 photograph, said to be at Fort Bellefontaine. Construction type appears to me to post-date the cantonment and relate to later farmstead periods. (From Anonymous 1904)
Figure #7. Root Cellar under the Administration Building at Cantonment Belle Fontaine. Field drawing from Railey 1996, unpaged.
Figure #9. Unpublished field map showing location of the 1996 new excavation units provided by Catherine Koziol and Jim Railey. North is to the top. The root cellar, not drawn in, would be on the left of center side of the drawing, adjacent and just to the east of the building identified as "Sup. Res." Stables or barn excavations are shown at east side of drawing, where the area is labeled "Jim Meiner’s clearing".
Figure #10. Presumed cantonment artifacts. Top left is woman’s comb found near the administrative building excavations. Bottom is the bayonet which came from the bottom of the root cellar. Top right is the back-mark is from an ironstone plate found in the refuse in the root cellar, but which must post-date the abandonment of the cantonment. No scale.
Figure #11. Dark olive-green bottle
Partially restored bottle, damaged by target practice, cantonment contemporary.
Figure #12. Stone-ware bottles.
Top is the stone ware bottle found in the refuse of the root cellar. Bottom is the stoneware vessels found ear the Tandy farmhouse, with an enlargement of the “Blacking” label.
Creamware plate, Chinese design

Figure #13. Chinoiserie ware
Two larger fragments of chinoiserie ware, possibly cantonment contemporary.
Figure #14. Large pearlware bowl, showing rim and side decorations. Style appears to Pastoral or American building view, which should post-date 1826. Originally thought to be a chamber pot, later work suggested more likely a large serving bowl.
Figure #15. Pearlware vessel.
Appears to show fox hunt on exterior, country mansion on inside, post-dating 1826.
Figure #16. Pearlware plates.
Top figure appears to show rural plantation.
Bottom figure two examples of feather or shell-edged plates.

Pearlware plates, blue shell-edged pattern