Village and Town of Arcade
Flood Mitigation Action Plan

1. - Introduction

The Village and Town of Arcade have experienced several floods in the past, resulting in severe damage to residential, commercial, and public property as well as risks to the safety of residents and others. Beginning in October 1997, meetings to discuss flooding problems and streambank erosion issues in the Village and Town of Arcade have been held and attended by a number of local, regional, state and national agencies.

From these discussions the Arcade Flood Mitigation Planning Committee was formed (hereafter referred to as the Committee). The village, as lead agency on behalf of the town and village, applied for and was awarded a Federal Emergency Management Agency Flood Mitigation Assistance - Planning Grant from the New York State Emergency Management Office.

The Committee expanded its membership to review flood risks and hazards, encourage public involvement, develop mitigation activities, and recommend action steps to alleviate flood-related problems in the Village and Town of Arcade. This plan describes and summarizes the Committee's process, findings, and recommendations.

2. - Background

The Village and Town of Arcade are located in the southwest corner of Wyoming County in western New York with Erie County to the west and Cattaraugus County to the south. The Holland Land Company purchased the land on which the Village and Town of Arcade now rest in 1792.

Originally part of the Town of Batavia in Genesee County, the area underwent three separate name changes until it was renamed Arcade in 1866. In 1871 the Village was incorporated. Presently, the Town covers an area of approximately 47.1 square miles of which the Village occupies 2.5 square miles.

This section is meant to provide an overview of the characteristics of Arcade's residents, housing, and businesses, the sources of the flooding problems, and a brief history of past floods in the village and town.

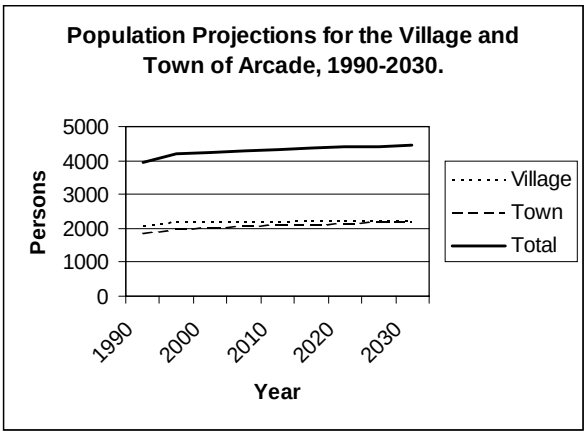
2.1 - Population, Housing, and Socioeconomic Characteristics

The 1990 census showed that 2,082 people lived within the village limits with an additional 1,857 people living in the Town of Arcade. Therefore, the total population for the study area was 3,938 in 1990.

As a community, the Village and Town of Arcade are experiencing steady growth making them one of the faster growing communities in Wyoming County. According to population projections done by the Genesee/Finger Lakes Regional Planning Council, the estimated population of the village and town in 1995 was 4,195. The population of the town and village is expected to increase to 4,449 by the year 2030.

According to these projections, both the village and town are expected to experience a steady, albeit slight, increase in population over the next 30 years. Graph 1 shows the population projections for the village and town from 1990 to 2030.

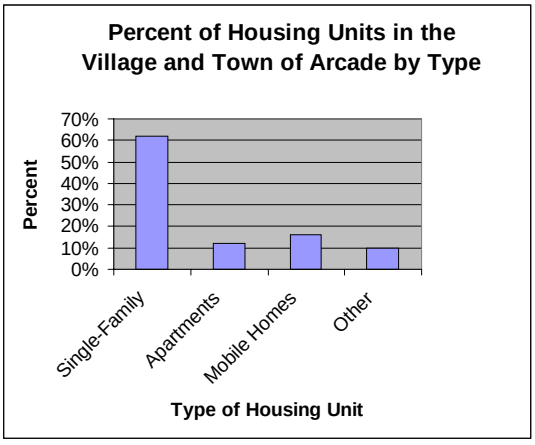
Graph 1



Source: New York State Association of Regional Councils, 1997.

In 1990, there were 817 housing units in the village and 780 housing units in the town. Of the 1597 total housing units, the majority (62%) are single-family homes. Mobile homes and apartments made up an additional 28% of the housing stock. The distribution of housing units by type is displayed in Graph 2.

Graph 2



Source: U.S. Census Bureau, 1990.

In 1990, 62% of all occupied units were owner-occupied. The median value of owner-occupied units was $55,400 in 1990. During the 1990's the Town of Arcade was one of the two communities with the highest number of permits issued for new homes in Wyoming County.

The manufacturing/industrial base in Arcade is the strongest in Wyoming County. Arcade's major employers include Prestolite Electric, American Precision, and Koike Aronson, which combined employ over 850 people.

Agriculture is also a significant industry in the town and the village has a number of agribusinesses. The locally operated Arcade & Attica Railroad is the second largest tourist attraction in Wyoming County (after Letchworth State Park) with an estimated 27,000 riders per year.

Median household income in 1989 for the village was $25,784 and slightly less for the town at $25,108. The same held true for per capita income in 1989 with the village at $11,148 and the town at $10,848. The percent of persons for whom poverty status was determined by the Census Bureau was 10.4% in the village and 7.3% in the town.

2.2 – Sources of the Flooding Problems

The primary sources of flooding in the Village and Town of Arcade are Cattaraugus Creek and Clear Creek. Cattaraugus Creek enters the town from its northern border between East Arcade Road and Java Lake Road. Cattaraugus Creek flows southwesterly until reaching the village, where it continues westerly, running parallel with Main Street and North Street until exiting the village.

Tributaries of Cattaraugus Creek also pose flood risks to the town. Tyler Brook flows southwesterly and enters Cattaraugus Creek approximately four-tenths of a mile north of Clark Road. Spring Brook crosses Allen Road and enters Cattaraugus Creek running parallel with East Arcade Road.

The other significant tributary that enters Cattaraugus Creek is Monkey Run which flows south along the Arcade & Attica Railroad tracks from the town's northern boundary until joining Cattaraugus Creek at East Arcade Road to the west of Cattaraugus Road.

Clear Creek enters the town from the south approximately eight-tenths of a mile east of the village boundary. It flows northwesterly until its convergence with Cattaraugus Creek under the bridge on East Main Street.

A stream referred to as Haskell Creek enters the village from the south approximately 1000 feet east of Park Street running parallel with NYS Route 98. Before it enters Haskell Avenue, an 18-foot high abandoned railroad bed obstructs water from the creek.

There is a 36-inch pipe under the railroad bed that constricts the flow of water as Haskell Creek flows northeast along Haskell Avenue until it converges with Clear Creek near the intersection of Haskell Avenue and Liberty Street.

In the village and the town, the areas most susceptible to flood damage can be found along these creeks and their tributaries. Revised Flood Insurance Studies (FIS) were done by the Army Corps of Engineers (ACE) for the Federal Emergency Management Agency (FEMA) in 1992.

These studies indicate that the principal flooding problems are located along Cattaraugus and Clear Creek and the floodplain within the village. Cattaraugus and Clear Creeks converge in the eastern end of the village, and it is at this confluence that the greatest amount of flooding occurs. This is of special concern because there is a large amount of residential and commercial development in this area.

Maps of the village and town included in this report display the 100-year floodplain and floodway area for the Village and Town of Arcade. The 100-year floodplain is the area subject to inundation by water as a result of a flood that has a one-percent chance of occurring in any given year.

According to FEMA, "[t]he floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood (also referred to as the intermediate regional flood or base flood) can be carried without substantial increases in flood heights (*Village of Arcade Flood Insurance Study*, FEMA, March 3, 1992: 2).

2.3 - A Brief History of Flooding Problems

Low-lying areas in the Village of Arcade are subject to periodic flooding caused by the overflow of Cattaraugus Creek and Clear Creek at their confluence. In addition, flooding at the Water Street and Main Street bridges occurs as a result of clogging by trees and debris. The floodwaters from both areas back up and flow down Pearl Street and along the south side of Main Street.

Other frequent flooding areas in the Village are Church, Park and Water Streets. The runoff coming down the hill at the end of Park and Water Streets, and the overflow diversion area from Haskell Creek, are the main sources of flooding in this area of the Village (*Village of Arcade Flood Insurance Study*, FEMA, March 3, 1992: 2).

In the Town of Arcade, the principal flooding problems are located along Cattaraugus Creek and its tributaries as well as Clear Creek near the southern border of the town. The Flood Insurance Study states that most major floods in recent years have occurred in the late spring or early summer and were caused by excessive rainfall. However, flooding has also occurred during the winter as a result of snowmelt combined with rainfall.

The greatest recorded flood occurred in the Village and Town of Arcade on July 6, 1902; it was estimated to have had a recurrence interval of greater than 200 years. Other significant floods occurred in the Village and Town of Arcade in 1908, March 1942, March 1956, September 28, 1967, March 1971, June 1972 (Hurricane Agnes), June 18, 1984, June 11, 1986, June 21, 1989, January 19, 1996, June 1996, and June 26, 1998.

Newspaper articles describing the 1902 flood reported "a torrent of water, six feet deep, pouring down from Clear Creek along Main Street and Pearl Street." (*ACE Memorandum*, December 12, 1990: citing newspaper articles printed by the *Wyoming County Herald*, July 11 & 12, 1902).

The flood of September 28, 1967 "produced substantial damage" (*ACOE Memorandum*: 3). Although this flood had an estimated recurrence interval of 40 years *(Village of Arcade Flood Insurance Study*: 3-4), the total precipitation was 4.0 inches on September 28 and 0.92 inches the next day. This heavy rainfall resulted in over $27,000 in damage to approximately 40 residences and commercial establishments as well as public property.

After the flood of June 1984, "many people recalled it was the highest water in town since the aftermath of Hurricane Agnes in 1972, when the creek rose above the street level." Areas affected included the elementary school, village offices and the backup well on Church Street as well as portions of Park Street, Mill Street, and Haskell Avenue. (*Wyoming County Herald*, *June 21, 1984*.)

In 1989, on June 21 and 23, 4.6 inches of rain fell in the basin. "The flood resulted in many residences, buildings, and basements being flooded, people being evacuated on Main and Water Streets, major damage to public roads, farm erosion and crop damage, and a declaration of a State of Emergency.

Based on backwater computations, it is estimated that the June 1989 flood had a discharge of 9,700 cubic feet per second and a 100-year frequency of occurrence." *(ACOE Memorandum:* 3) After this flood local officials sent out damage questionnaires to the residents affected by the flood and the Corps of Engineers established high water marks and conducted damage surveys. The Corps determined that most of the structures in the flood area were residential and commercial and that the flood had resulted in approximately $645,000 in flood damage *(ACOE Memorandum:* 5).

The more recent floods in the Village and Town of Arcade have also been severe. On January 19, 1996 the area experienced flooding at American Precision Industries on Route 98 (as a result machine oil was washed into Cattaraugus Creek); on Genesee Road at Route 98; at the Town Highway parking lot; in the Open Gate Trailer Court (about 20 units were affected) where flooding from Cattaraugus Creek came over the road and over the railroad tracks (at Genesee Road and behind the Open Gate Trailer Court); in the Mockingbird Campground; at a residence on Route 98 south of Genesee; and at Ray Milks' Farm Market. There was substantial flooding the following spring as well.

The June 26, 1998 flood served as the impetus for the creation of this plan and has been well documented. A video of the flooding was produced and shows the floodwaters as they inundated Main Street, Route 98, Water Street, and other areas as described later in this report. Information from residents, officials, and business owners regarding the June 26, 1998 flood is referenced frequently and serves as the basis for the delineation of areas that can expect to be flooded again during heavy rainfall.

2.4 - National Flood Insurance Program (NFIP) Participation

As of December 12, 1998 there were three NFIP policies in place in the Town of Arcade and 27 in the village. All three of the policies held in the town are in the FIRM's A-Zone. Over half of the policies (15 of 27) in the village fall within the A-Zone. Table 1 provides a summary of NFIP policy and claim information for the village and town.

Table 1

NFIP Policy and Claims for Arcade, New York as of Dec. 12, 1998					
	Total Policies	Total Premium	Coverage Total	Claims Since 1978	Total $ Issued Since 1978
Village	27	$ 11,304.00	$ 1,865,200.00	25	$ 228,218.00
Town	3	$ 1,324.00	$ 132,500.00	3	$ 767.00

Source: Insurance Services Office, Inc., 1999

Since 1978, there have been three claims for damages in the town for $767 and 25 in the village for $228,218. Thirteen of the claims in the village were made between November 4, 1998 and December 2, 1998. It is likely that the majority (if not all) of the claims were a result of the June 26, 1998 flood. The total premium paid for the three policies in the town in 1998 was $1,324, providing $132,500 in coverage.

As of June 1999, there are five structures in the village that have experienced repetitive losses as a result of flooding. There are no repetitive loss structures in the town at this time. Of the five repetitive loss structures in the village, four filed claims after the June 22, 1989 and June 26, 1998 floods. The remaining repetitive loss structure also filed a claim after the June 26, 1998 flood; however, the previous claim was filed following the January 19, 1996 flood which was due to excessive snowmelt.

3. - Planning Process

This plan is a result of the work done by the Arcade Flood Mitigation Planning Committee and its subcommittees. The Committee was comprised of representatives from public agencies, businesses, and private citizens.

Coordination between a number of agencies at the local, county, regional, state, and federal levels along with private interests was initiated to insure that the issues affecting both residents and businesses in Arcade would be included in the development of the flood mitigation action plan.

Three subcommittees were also formed to address critical aspects of the flood mitigation action plan: Public Outreach/Participation Subcommittee (POPS), Flood Hazard Assessment Subcommittee (FHAS), and the Flood Solutions Development Subcommittee (FSDS).

The Committee and sub-committees met monthly beginning in December 1998. This section describes the work done cooperatively by multiple agencies at the meetings, activities done to