

ROAD-CURB PONDING: A DRAIN ON CHINATOWN



Senator Daniel Squadron
New York State Senate



September 2011

TABLE OF CONTENTS

Executive Summary.....	2
What is Ponding and Why Does it Matter?.....	3
Identifying and Explaining Ponding Throughout Chinatown.....	4
Data Collection	4
Detailed Findings	4
Identifying Ponding	6
Ponding's Effect on Quality of Life and Business	7
Response to Ponding.....	8
Addressing Ponding.....	9
Conclusion.....	10
Appendix.....	11

EXECUTIVE SUMMARY

Chinatown is one of the oldest and most vibrant neighborhoods in the heart of New York City, with diverse and densely packed residents and businesses. In addition, thousands of vehicles and people travel through Chinatown between Brooklyn, Manhattan, and New Jersey every day. As one of the most heavily trafficked neighborhoods in Manhattan, Chinatown has particular demands on its aging streets.

One of the most pervasive problems with Chinatown street conditions is road-curb ponding – when a small body of still water formed by the hollowing or embanking of streets does not evaporate after a rainfall. Ponding affects the quality of life for area residents, impacts public health and local businesses and, if left unrepaired, leads to more serious and costly damage to the road.

On-the-ground research and evaluation, combined with in-person interviews and written surveys of residents, business owners and visitors revealed the following key findings:

72% of respondents in Chinatown say that ponding negatively impacts their experience

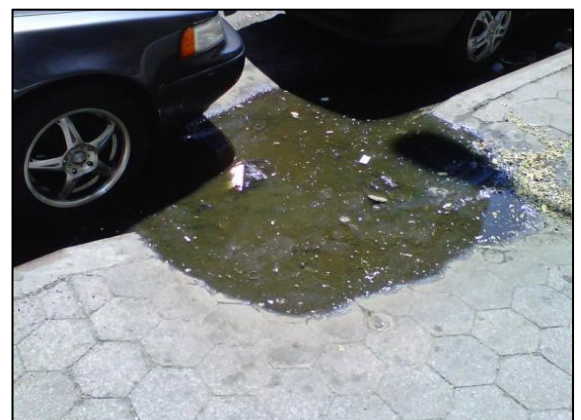
- 93 unique ponds in Chinatown that had not drained within 48 hours following a rainfall were identified.
- 72 percent of survey respondents in Chinatown said that ponding negatively impacts their eating or shopping experience.
- Two out of five respondents said that they are less likely to visit because of ponding.
- 58 percent of respondents said that they did not know who to contact to report ponding.

This report will detail the prevalence of ponding in Chinatown, as well as the need for the City to remedy this problem and its ripple effects.

WHAT IS PONDING AND WHY DOES IT MATTER?

Road-curb ponding (“ponding”) is a small body of still water, formed by the hollowing or embanking of roads, that remains days after a rainfall (see Figure 1 for examples). The hollowing or embanking of the streets usually occurs in the area between the sidewalk and the road due to street cracks. These cracks are primarily caused by leaked toxic liquids and erosion, and aggravated by the freeze-thaw patterns of weather. Left unchecked, ponding affects the quality of life for the area’s residents, workers, and visitors, impacts public health, businesses, and the accessibility of roads and sidewalks, and leads to costly infrastructure repairs. Ponding also causes further deterioration of roads as water seeps into the concrete, widening the cracks in the asphalt. As these gaps become larger, the water damages streets, causes potholes, and becomes a breeding ground for insects, including mosquitoes. Additionally, the standing water in ponds mixes with trash and various liquids, creating odors that are exacerbated by the heat.

Figure 1: Examples of ponding at Canal and Allen Streets (top) and Baxter and Bayard Streets (bottom)



IDENTIFYING PONDING THROUGHOUT CHINATOWN

DATA COLLECTION

This report used two different methods to determine the scope and extent of ponding in Manhattan's Chinatown. Surveyors assessed the roads and curbs for ponding within a designated corridor located between Broome Street, Baxter Street, Essex/Rutgers Streets and Worth/Monroe/Cherry Streets (see Figure 2). Surveyors later administered a questionnaire to residents, business owners and professionals, and visitors. Both elements of the study were limited to the defined corridor, in which ponding complaints were prevalent.

Ponding was assessed on two study dates in July – both 48 hours after a rainfall – that were chosen to accurately identify ponding conditions. See the Appendix of this report for a detailed listing.

The survey was conducted between August 1 and August 15, 2011. Surveyors administered the questionnaire in-person throughout the study area to residents, business owners and professionals, and visitors. Copies were made available in Chinese, English, and Spanish. In total, 347 individuals completed the survey. Of the 127 who reported their contact information, 68 respondents – or 54 percent – reside within the study area. Complete survey results are available in the Appendix of this report.

DETAILED FINDINGS

- Between the two study dates, surveyors identified 93 unique instances of ponding that had not drained within 48 hours of a rainfall.
- The highest concentrations of ponding were found on five streets in the heart of Chinatown (detailed in the following section), which together accounted for 47 of the 93 unique ponds.

- An additional 11 ponds were found on Market Slip between Monroe and East Broadway, the most of any single street in the survey area.
- 72 percent of survey respondents in Chinatown said that ponding negatively impacts their eating or shopping experience.
- Two out of five respondents said that they are less likely to visit because of ponding.
- 62 percent of respondents in Chinatown rated the quality of the streets as “below average” or “poor.”
- Of the 331 survey respondents who have observed ponding, 76 percent said that they have not reported the problem - including to 311, the local community board, the Department of Transportation, a local organization, or local elected officials. Thirty-six percent of respondents did not reach out because they did not know who to contact. An additional 22 percent of respondents did not even know that reporting the problem was an option.

These and other results detailed below indicate that ponding is a pervasive problem throughout Chinatown that often goes unreported.

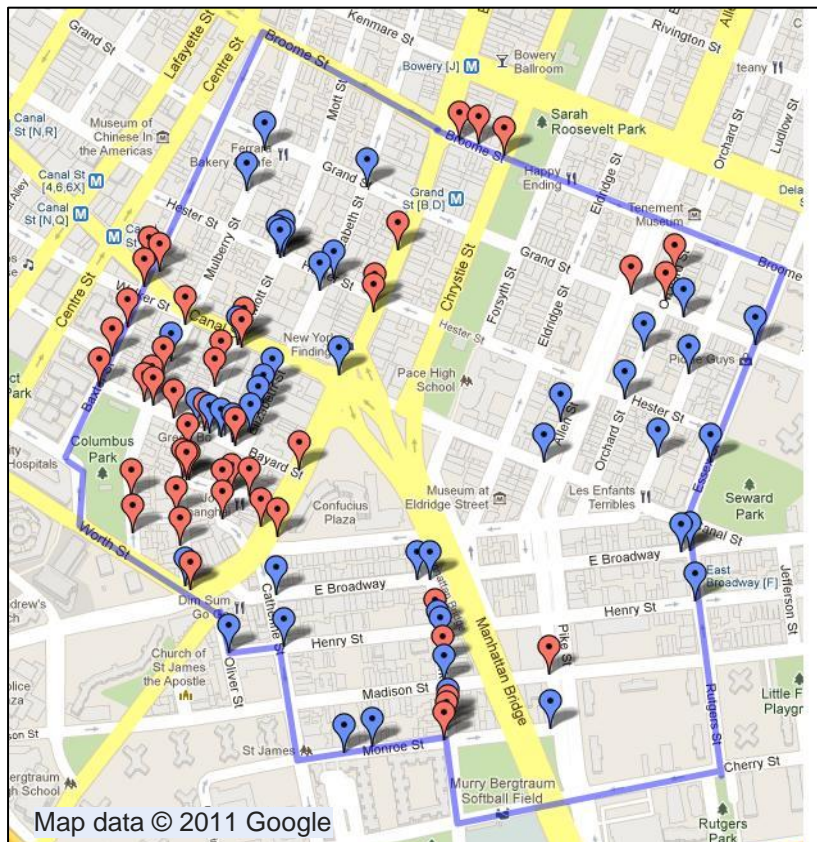


Figure 2: Ponding
Identified on Evaluation Day
One (Red) and Day Two (Blue)

IDENTIFYING PONDING

Despite July 2011 being the thirteenth driest month of July in the Northeast since 1895¹, with less than three inches of rainfall, surveyors still identified 93 unique instances of ponding throughout the study area between the two study dates. More than half of the recorded instances were within the nine blocks bound by Canal Street, Baxter Street, Worth Street, and Bowery, averaging five instances of ponding per block. Surveyors found that five streets in particular displayed very poor conditions:

- Bayard Street between Bowery and Baxter Street
- Mulberry Street between Worth and Canal Streets
- Mott Street between Worth and Hester Streets
- Baxter Street between Leonard and Canal Streets
- Elizabeth Street between Bayard and Hester Streets

Together, these five streets in the southwest corner of Chinatown accounted for 47 of the 93 unique instances of ponding. Market Slip between East Broadway and Monroe Streets was also found to be in poor condition, with 11 ponds observed. The high concentration on these particular streets suggest that they are prone to poor drainage, as ponding is generally caused by standing water that seeps into the sub-surface of the road, causing cracks and depressions that spread throughout the block if the problem is not addressed.

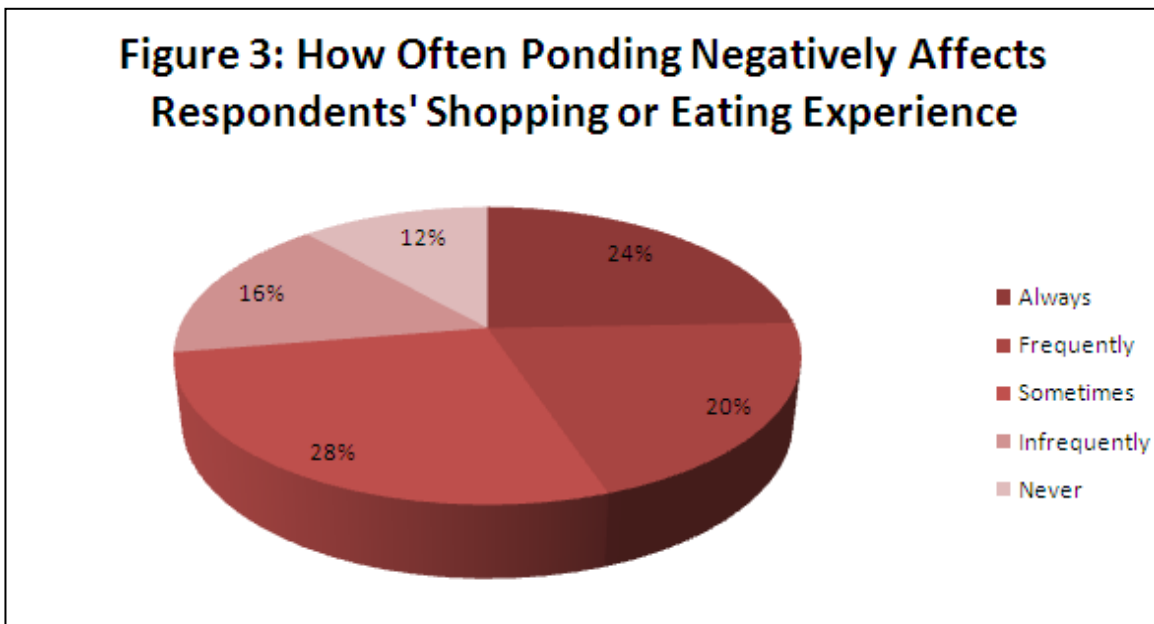
In the summer of 2009, the Chinatown Partnership Local Development Corporation began a similar initiative to track quality of life issues in Chinatown. Over the past two years, the Partnership identified 177 unique instances of ponding in Chinatown.² Its observations showed considerable overlap with the ponds identified by the surveyors in this

¹ NOAA, "State of the Climate National Overview," August 2011
<http://www.ncdc.noaa.gov/sotc/national/>

² The Chinatown Partnership logged its incidents on the Fund for the City of New York's Computerized Neighborhood Environment Tracking system at
<http://venus.fcny.org:8080/comnet/incidentreport.m>

study. The Partnership also concluded that ponding is a serious problem on Bayard Street, Canal Street and Market Slip, and occurs throughout Chinatown. The Partnership has reported each of these ponding instances since 2009, yet the same ponds are identified year after year.

Survey respondents overwhelmingly indicated that ponding is a serious problem in Chinatown. Nearly two thirds of respondents reported that ponding occurs “always” or “frequently” after rain. And 94 percent of Chinatown respondents reported observing ponding.



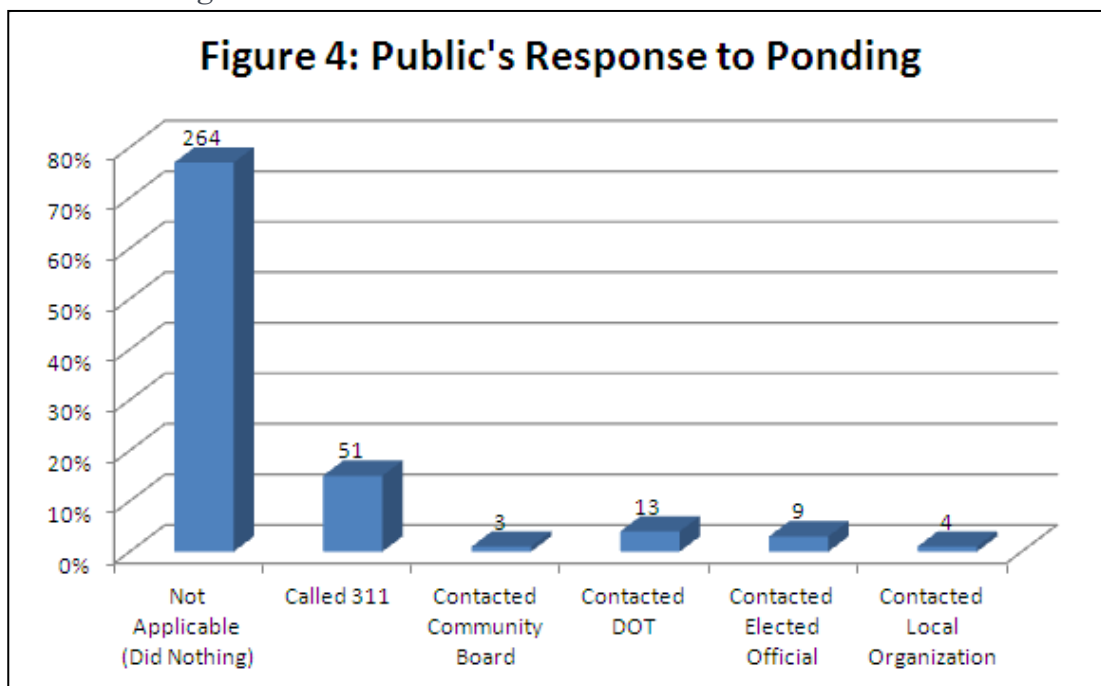
PONDING’S EFFECT ON QUALITY OF LIFE AND BUSINESS

This survey also found that respondents perceive ponding to have a negative effect on their quality of life and local business. Sixty-four percent of respondents said that they value their home or business less because of ponding. Seventy-two percent of respondents felt that ponding “always,” “frequently,” or “sometimes” negatively impacts their shopping and eating experience (Figure 3). In addition, two out of five respondents -- 39 percent -- said that they are less likely to visit because of ponding conditions. Beyond ponding’s negative implications for area health and quality of life, these numbers suggest that ponding

has detrimental economic consequences, costing small businesses valuable income as shoppers visit the neighborhood less often and spend less money.

RESPONSE TO PONDING

Despite the considerable number of ponds identified and general public awareness of the problem, conditions have not improved. Sixty-nine percent of those surveyed in Chinatown said that the City’s response to ponding is “poor” or “below average.” When asked about the overall condition of the streets, 62 percent of respondents rated them as “poor” or “below average.”



Of the survey respondents who reported observing ponding, 77 percent said they have not reported it to any agency or organization – including 311, their local community board, the DOT, a local organization, or their local elected officials (Figure 4). The primary reason for not reaching out – reported by 36 percent of respondents - was that the respondent did not know who to contact. An additional 22 percent of respondents did not even know that reporting ponding was an option. Another 20 percent of respondents have not reached out because the situation “has always been this way.” No matter how aware the public is of the issue, there is an overall lack of reporting and a general lack of knowledge of the proper ways to report ponding.

ADDRESSING PONDING

In order to address ponding and improve the streets of Chinatown, the City Department of Transportation (DOT), community stakeholders, and local government representatives must work together to make repairs, develop strategies to prevent ponding in the future, and educate area residents and business owners on the need to report the problem.

Working with the Department of Information Technology and Telecommunications, DOT should create a specific 311 category for ponding and, therefore, develop a more effective system to record and track the status of repair requests (as is currently done with potholes). DOT should collaborate with the local Community Board, community organizations and elected officials to raise awareness of the enhanced 311 system and the need to report the problem.

DOT should use this report and community outreach to assess the prevalence of the problem, prioritize Chinatown street repairs, and ensure the issue receives sufficient attention and funding moving forward.

CONCLUSION

- Questionnaire respondents concurred with the surveyors' observations, reporting that ponding occurs often and has a significant impact on Chinatown's quality of life and businesses.
- While the evidence of ponding is clear, community members generally do not know how to report the problem. The New York City Department of Transportation relies in large part on 311 to understand which roads are in greatest need of repairs. But only 17 percent of respondents have reported ponding, with 77 percent having done nothing to report the issue because, in most cases, they did not know who to contact.
- The Department of Transportation, in collaboration with local elected officials, community stakeholders and other agencies, must work to repair existing ponds, prevent future ponding, and create a 311 protocol to accept ponding complaints.
- While ponding is particularly prevalent in Chinatown, it is a problem throughout New York City. The takeaways from this study can certainly be applied elsewhere.

APPENDIX

APPENDIX 1 – DOCUMENTED INSTANCES OF PONDING

Day 1:

- Monroe between Catherine and Manhattan Bridge
- 31 Monroe Street
- Allen and Canal Streets
- Allen between Canal and Hester Streets
- Mulberry and Bayard Streets
- Broadway and Rutgers Street (2)
- Canal and Bowery Streets
- Canal and Ludlow Streets
- Catherine and Henry Streets
- East Broadway and Market Street
- East Broadway and Catherine Street
- Elizabeth and Hester Streets
- Essex and Grand Streets
- Essex and Hester Streets
- Grand between Ludlow and Orchard Streets
- Henry and Catherine Streets
- Henry and Market Streets (2)
- Henry and Oliver Streets
- Hester and Orchard Streets
- Ludlow between Grand and Hester
- Ludlow between Hester and Canal
- Market and Madison Streets
- Market between Monroe and Madison Streets
- Market between Madison and Henry Streets
- Monroe and Pike Streets
- Mott and Canal Streets
- Mott and Worth Streets
- Mulberry and Grand Streets
- Mulberry between Canal and Bayard Streets
- Mulberry between Grand and Hester Streets
- Oliver between Madison and Henry Streets

Day 2:

- Allen and Grand Streets
- Baxter and Bayard Streets
- Baxter and Canal Streets
- Baxter and White Streets
- Baxter between Canal and Bayard Streets
- Intersection of Baxter and Canal (2)
- Bayard and Mulberry Streets (2)
- Bayard between Mott and Mulberry Streets
- Bayard and Elizabeth Streets
- Bowery and Bayard Streets
- Bowery and Broome Streets
- Bowery and Grand Streets (2)
- Bowery between Doyers and Pell Streets
- Bowery between Hester and Grand Streets
- Broome and Chrystie Streets
- Broome and Eldridge Streets (2)
- Broome between Bowery and Chrystie Streets
- Broome between Forsyth and Eldridge Streets
- Canal and Ludlow Streets
- Canal and Mulberry Streets
- Canal between Mott and Mulberry Streets
- Canal between Allen and Eldridge Streets (2)
- Corner of Market and Monroe
- Division and Bowery Streets
- Division between Eldridge and Pike Streets
- Doyers between Bowery and Pell Streets
- Doyers and Pell Streets
- East Broadway and Catherine
- East Broadway and Market Streets

Day 1 (con't):

- Bayard and Mott Streets (4)
- Elizabeth and Bayard Streets (4)
- Grand and Elizabeth Streets
- Mott and Bayard Streets
- Mott and Hester Streets (3)
- Orchard between Hester and Grand Streets
- Rutgers and Henry Streets (2)
- Rutgers and Madison Streets
- Madison and Henry Streets
- Bayard between Mott and Mulberry Streets (3)
- Grand and Hester Streets

Day 2 (con't):

- Forsyth and Grand Streets
- Forsyth between Grand and Broome Streets
- Grand and Allen Streets
- Grand and Orchard Streets
- Hester and Allen Streets (2)
- Market and Henry Streets
- Market and Monroe Streets (2)
- Madison between Market and Henry Streets
- Mott and Bayard Streets
- Mott and Canal Streets (3)
- Mott and Moscoe Streets
- Mott and Pell Streets
- Mott and Worth Streets
- Mott between Bayard and Canal Streets
- Mott between Worth and Moscoe Streets
- Mott between Bayard and Canal Streets (3)
- Mott between Pell and Bayard Streets
- Mulberry between Bayard and Canal Streets
- Mulberry between Moscoe and Bayard Streets
- Mulberry between Worth and Moscoe Streets (2)
- Mulberry and Bayard Streets (2)
- Mulberry and Canal Streets
- Orchard between Grand and Broome Streets
- Pell between Bowery and Doyers Streets
- Pell and Mott Streets
- Pell and Doyers Streets (2)
- Pell and Mott Streets
- Pike and Madison Streets
- Bayard and Elizabeth Streets
- Catherine between Market and Madison Streets
- Allen and Broome Streets (2)
- Bowery and Grand Street
- Canal Street and Bowery
- Canal and Allen Streets
- Grand and Ludlow Streets
- Henry and Market Streets

APPENDIX 2 – THE SURVEY

SENATOR SQUADRON CHINATOWN PONDING SURVEY

Zip Code:

Ponding: A small body of still water formed naturally or by hollowing or embanking. i.e. large puddles

1) How often do you see ponding on your block?

Never Infrequently After Rain Sometimes After Rain Frequently After Rain Always After Rain

2) After it rains, how long does it take for water to drain?

Less than Two Days Two Days Three Days to a Week More than a Week

3) How often does ponding negatively affect your shopping/eating experience?

Never Infrequently Sometimes Frequently Always

4) In regard to ponding, how would you rate the overall streets in your neighborhood?

Poor Below Average Average Above Average Outstanding

5) Are you less likely to visit a neighborhood if there is ponding?

Yes No

6) Do you value your home/business less due to ponding?

Yes No

7) How is the City's response to ponding?

Poor Below Average Average Above Average Outstanding

8) Which of the following have you done in response to ponding? Check all that apply.

- ☐ Called 311
- ☐ Contacted your Community Board
- ☐ Contacted the Department of Transportation
- ☐ Contacted another organization in your area
- ☐ Contacted an elected official
- ☐ Not applicable

9) If you find ponding a problem and have not reached out, why not? Check all that apply

- ☐ Did not know it was an option
- ☐ Did not know whom to contact
- ☐ It has always been this way
- ☐ Not enough of an issue
- ☐ I do not find ponding to be a problem

Optional

Name:

Male/Female:

Age:

Address:

Phone Number:

Email:

APPENDIX 3 – SURVEY RESPONSES

How often do you see ponding on your block? (Out of 346)

	Percent of Total	Number of Responses
Always After Rain	35.55%	123
Frequently After Rain	28%	97
Sometimes After Rain	20%	68
Infrequently After Rain	11%	38
Never	6%	20

After it rains, how long does it take for water to drain? (Out of 343)

	Percent Total	Number of Responses
More Than a Week	14%	48
Three Days to a Week	29%	99
Two Days	21%	73
Less Than Two Days	36%	123

How often does ponding negatively affect your shopping/eating experience? (Out of 344)

	Percent Total	Number of Responses
Always	24%	84
Frequently	20%	70
Sometimes	28%	95
Infrequently	16%	55
Never	12%	40

In regard to ponding, how would you rate the overall streets in your neighborhood? (Out of 343)

	Percent Total	Number of Responses
Poor	36%	124
Below Average	26%	88
Average	30%	102
Above Average	7%	24
Outstanding	2%	7

Are you less likely to visit a neighborhood if there is ponding? (Out of 345)

	Percent Total	Number of Responses
Yes	39%	136
No	61%	209

Do you value your home/business less due to ponding? (Out of 331)

	Percent Total	Number of Responses
Yes	64%	212
No	36%	119

How is the City's response to ponding? (Out of 339)

	Percent of Total	Number of Responses
Poor	41%	138
Below Average	28%	95
Average	27%	93
Above Average	4%	12
Outstanding	0%	1

Your Response to Ponding

	Percent of Total	Number of Responses
Called 311	17%	51
Contacted Community Board	1%	3
Contacted DOT	3%	13
Contacted local organization	1%	4
Contacted elected official	2%	9
Not applicable (Did Nothing)	77%	264

Reason for Not Reaching Out

	Percent of Total	Number of Responses
Did not know it was an option	22%	90
Did not know whom to contact	36%	151
Has always been this way	20%	82
Not enough of an issue	10%	42
Do not find ponding to be a problem	12%	53

APPENDIX 4 – ADDITIONAL PHOTOS



ALLEN AND BROOME STREETS



CANAL AND ALLEN STREETS