

5. DOWNTOWN BROOKLYN TRAFFIC CALMING APPROACH

5.1 Calming Brooklyn's Traffic

As noted in *Section 4.2*, planners and engineers can meet the challenges of managing an intensely-used area like Downtown Brooklyn using one or more tools. That these tools can be used individually or in combination to meet different challenges reflects their differing foci; no single tool is appropriate for meeting all challenges. Nor can traffic calming solve all Downtown Brooklyn's traffic problems. Appropriately focused, a traffic calming approach can be used to ameliorate the effects of a number of the traffic problems that currently beset the area.

An important distinction must be drawn between ameliorating traffic problems and ameliorating their effects. It is possible to reduce traffic as a means of reducing its impacts; throughout the study, many in the community expressed the need to reduce traffic as an objective in its own right. However, this study has maintained a focus on reducing the *effects* of traffic on the environment of Downtown Brooklyn's streets as its key objective. This emphasis on reducing effects is consistent with the generally accepted Institute of Transportation Engineers (ITE) definition of traffic calming and has provided the community and the project team with an achievable traffic calming goal.

In the context of reducing traffic's impacts, the objectives of the study were refined to more closely meet achievable goals. Specific objectives were as follows:

- Do not increase total traffic capacity through the area. Rather, improve efficiency of primary streets while discouraging through movement on other streets in order to redirect traffic from inappropriate routes.
- Reinforce appropriate travel patterns and street usage consistent with the Street Management Framework (see *Section 5.2*)
- Examine and improve high pedestrian accident locations.
- Examine and reinforce the truck network.
- Examine and reinforce the bicycle network.
- Integrate specific treatments with area-wide strategies.

A process with four broad steps was followed in developing a traffic calming strategy for Downtown Brooklyn:

- **Define street categories** – Classify each type of street by different *characteristics* (physical, land use, movement, connections) and management *objectives* (safety, access, street environment)
- **Classify streets** – Organize the street network to act as a unit, to meet the varying needs of those who use it. This implies that different streets have different functions.
- **Identify conflicts and problems** – Determine where conditions on individual streets fail to meet the ideals, given their functions.
- **Formulate strategies** – Establish what can be done to improve the street environment.

5.2 Downtown Brooklyn Street Management Framework

5.2.1 What is a street management framework?

Streets are not only parts of the transportation system but are also public spaces that serve community roles. A management framework is a way of classifying different types of street based on both their transportation functions and their community roles. A street management framework provides a basis for developing and evaluating a coherent traffic calming strategy and sets of measures designed to support that strategy. The framework provides a basis for:

- establishing a picture of how different streets should function;
- identifying where streets are functioning poorly (that is, not in accordance with their designated function);
- developing management strategies to help streets function as they should; and
- ensuring management measures are implemented in a coordinated way.

5.2.2 Types of Street

A conventional hierarchy based on road function designates streets as arterials, collectors or local streets on the basis of their traffic movement and access functions. The Downtown Brooklyn Street Management Framework broadens the range of functions considered in designating street types to include the roles streets play as public spaces and community resources.

The management framework for Downtown Brooklyn was developed with reference to similar approaches adopted elsewhere in the world. In this case, the Danish street management model has been the primary source of guidance. The Danish model includes two categories of street: *Traffic Streets* and *Living Streets*. This concept has been adapted for use in Brooklyn, taking into account the local environment, the streetscape, and also the objectives for street improvements identified by the community. The framework itself emerged from discussions with the community about their visions for each street in the study area; the need to provide a framework with enough structure to guide planning but enough flexibility to consider the interests of both motorized and non-motorized street users became obvious during these discussions. The framework was validated through discussions with the project's Task Force and participating Community Boards.

The following street categories were defined:

- Travel Streets
- Community Streets
- Living Streets

Not all streets fit comfortably into a single category. In such cases the management strategy developed reflects the street's multiple functions and characteristics.

The characteristics of each street category are described below.

5.2.2.1 Travel Streets

Travel Streets provide critical transportation links and allow for movement, while also serving as destinations in their own right for commercial, cultural and institutional activities. Typically, regional commercial and institutional uses front Travel Streets; in some cases they are mixed with limited residential space.

Travel Streets comprise the skeleton of the roadway system and provide important connections to expressways and other Travel Streets. Travel Streets should be designated as through or local truck routes, typically form part of bus routes, and provide access to subway stations. Because of the types of land use on them, Travel Streets typically experience significant pedestrian activity.

Generally, Travel Streets are wide, are composed of multiple lanes in each direction and have high traffic capacity, although the main function of a Travel Street may be to provide good connectivity, rather than high traffic capacity. This means that a relatively narrow street can act effectively as a Travel Street provided that its main function is to connect two parts of Downtown Brooklyn and provide connections to other areas, rather than necessarily to carry a high volume of traffic.

Travel Streets should provide a comfortable, attractive and safe environment for all street users. They should not act as barriers for pedestrians and bike riders. They should allow efficient traffic flow and should provide access to adjacent businesses and institutions.

These characteristics can be distilled into a set of objectives for managing Travel Streets:

- Alleviate traffic bottlenecks with traffic management strategies.
- Facilitate pedestrian and bicycle movement.
- Improve street environment for pedestrians, bicyclists, businesses and residents.
- Discourage excessive speeds and aggressive driving.
- Improve access to businesses and institutions.
- Reduce the degree to which major streets are barriers between neighborhoods

5.2.2.2 Community Streets

Community Streets serve as “Town Centers” for neighborhoods and the Central Business District (CBD), by providing shopping, services, and entertainment and by acting as gathering places. Community Streets are typically fronted by mixed neighborhood commercial and residential uses and consequently experience high levels of pedestrian activity. These streets also typically provide important transportation connections between Travel Streets and Living Streets. Typically, Community Streets form parts of bus routes and in many cases provide access to subway stations. In CBD areas, vehicle mobility may be more limited on Community Streets.

Community Streets should provide an attractive pedestrian environment to encourage neighborhood activity. They should provide access to businesses and services. In managing these streets, a balance must be struck between the need to allow efficient traffic movement and the need for an attractive local environment.

Objectives for managing Community Streets include:

- Facilitate pedestrian crossings.
- Improve street environment for pedestrians, bicyclists, businesses and residents.
- Discourage excessive speeds and aggressive driving.
- Improve access to businesses and reinforce neighborhood commercial “cores”.

5.2.2.3 Living Streets

Living Streets provide access to living or working spaces. Living Streets are the local, typically residential streets where quality of life is the primary concern. In some cases, Living Streets exclusively serve industrial or educational uses.

Typically, Living Streets are narrow, are not located directly on transit routes, and have a low level of traffic movement (although some provide important intra-neighborhood connections). Living Streets' primary role is to provide access to residents and local land uses. Living Streets should be safe for all users. Motor vehicles should have minimal impact on the local environment and quality of life and traffic volumes should be low.

Living Streets' management objectives include:

- Protect the street environment.
- Maintain safety for residents.
- Discourage excessive speeds and aggressive driving.
- Discourage through traffic.
- Discourage inappropriate truck activity.

5.2.2.4 Vision for streets

Each street's classification is based both on its existing characteristics and on the vision for how the street should function. For example, a street that is located within a residential block may be designated a Living Street, even if it currently carries a large amount of unwelcome traffic. A Living Street designation signals that the street's primary function is not to carry substantial traffic and if it is doing so, it may be performing below a desirable standard. So the designation "Living Street" conveys the idea of the street's overriding residential nature and also serves as a declaration of intent that it should operate in a manner that does not prioritize its role as a through-traffic carrier. In spite of this classification, there is still a need to provide vehicular access to all blocks in the study area. And while the framework may call for changing a corridor's traffic flow to lower speed and capacity it is still critical to maintain a safe driving, walking, and cycling environment. Likewise, a Community Street designation signals that a street's primary function is to balance the competing demands for parking, walking, cycling, traffic, and other uses, and a Travel Street designation signals that a street's primary function is to carry traffic. In both cases, the streets' designations guide the design of traffic calming measures, in the context of maintaining safe environments for pedestrians, vehicles, and cyclists.

It should be recognized that some streets do not fit perfectly into any of the three categories, and some streets fulfill different types of functions at different times of day (Smith Street, which functions like a Community Street at all times except the morning peak period, is a good example). While the framework is used as a guide, strategies for specific streets must recognize their varying characteristics. But, most importantly, use of a traffic management framework implies that traffic calming improvements can be applied to all categories of street.

5.3 Downtown Brooklyn Street Designations

The following sections describe the networks of Travel, Community, and Living Streets. These sections discuss the role of each street in the overall traffic network; more detailed descriptions of current and proposed conditions for each street are given in *Section 7*.

Figure 5.1 (see next page) indicates individual street designations for the study area.




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Street Management Framework

-  Travel Streets
-  Community Streets - Neighborhood
-  Community Streets - CBD

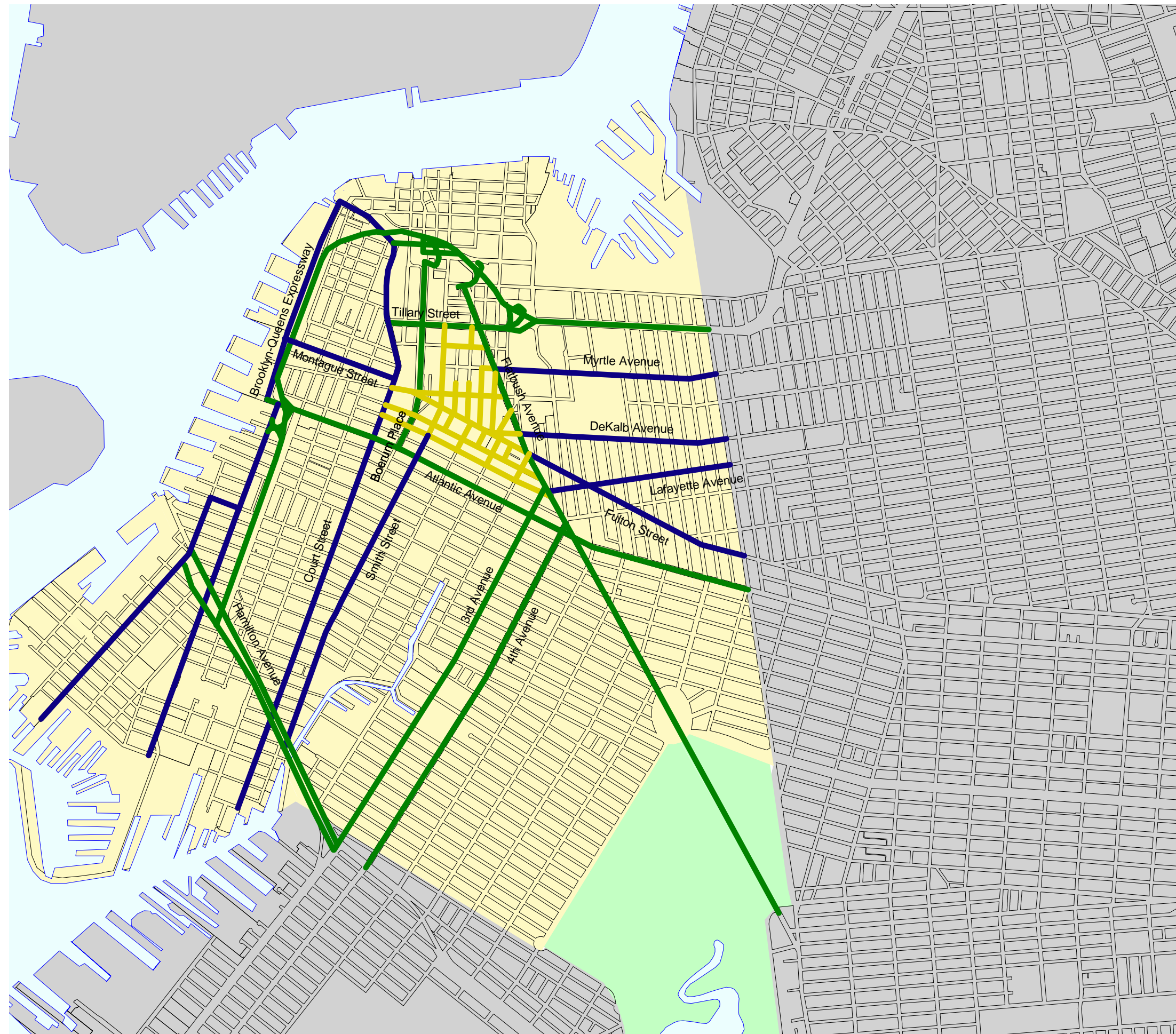
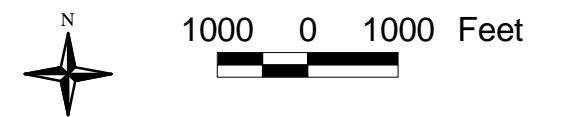


Figure 5.1

Street Management Framework



5.3.1 Travel Streets

4th Avenue and **3rd Avenue** provide the major north-south traffic capacity and connectivity through the area in addition to the BQE. Providing adequate north-south connectivity for surface streets in the west of the study area is important, given the congested nature of the BQE.

Along with the **BQE**, which borders the study area to the south and west, **Atlantic Avenue**, **Hamilton Avenue** and **Tillary Street** provide the major east-west traffic capacity and connectivity through the study area. North of Atlantic Avenue, **Adams Street** and **Boerum Place** provide substantial traffic capacity for entrance to the Brooklyn Bridge. **Flatbush Avenue** cuts diagonally across Downtown Brooklyn's street grid, providing northwest-to-southeast connectivity and capacity.

There is no obvious east-west candidate for a Travel Street designation in the part of the study area between Atlantic Avenue and Hamilton Avenue. This, together with the limited number of crossings of the Gowanus Canal in the southern section of the study area, means that a number of residential streets in Boerum Hill share the (limited) east-west traffic load.

All Travel Streets described here should be managed with the aim of optimizing their traffic performance, because acting as traffic conduits is their primary function. In many cases, traffic performance can be optimized through improvements to intersection operations; in some cases, improvements can also be achieved through rationalization of mid-block operations.

Optimizing traffic performance does not necessarily mean maximizing traffic capacity and sacrificing the interests of all users other than those traveling through the study area. Most of the Travel Streets in the study area have vibrant retail and other land uses that depend at the very least on comfortable pedestrian access and generally on users' ability to park either in front of or close by those uses. Accordingly, successful management of the Travel Streets depends on achievement of a balance between the various legitimate users of these streets.

Fortunately, analysis has shown that operational efficiencies can be achieved in a number of places in the study area. A typical tactic of traffic managers in such situations is to use the benefit achieved from improved traffic efficiency to increase local traffic capacity. However, the focus of this project has been to spread the benefits of such improvements across a range of goals for management of the study area's road network: improved safety, better parking provision, better transit provision and greater attention to pedestrian needs, as well as, where appropriate, greater traffic capacity. Where it is recommended that such benefits be used to achieve greater traffic capacity on a Travel Street, this forms part of a coordinated program directed at limiting intrusion of traffic into streets less suited to carrying traffic.

5.3.2 Community Streets

Supporting the Travel Streets and providing for accessibility through Downtown Brooklyn are the Community Streets. As described in the previous section, these streets act as retail and community foci. Many of them act as bus routes.

Court Street and **Smith Street** act as a one-way pair through the heart of the study area and represent major community foci. Smith Street plays an important northbound (morning) commuter peak capacity role, which does not conflict substantially with its community role throughout the rest of the day. Smith Street has become an important shopping and restaurant destination in Downtown Brooklyn. Court Street plays the same role for southbound traffic; the conflict between evening commuter peak traffic and shopping and other community activity that occurs on this street is somewhat more problematic than on Smith Street.

East-west Community Streets through Fort Greene include **DeKalb Avenue, Fulton Street, Myrtle Avenue** and **Lafayette Avenue**. Fulton Street and Myrtle Avenue are mixed-use community centers, while DeKalb Avenue and Lafayette Avenue are one-way streets that are more residential in character. All four streets have bus service. Maintaining smooth operations and appropriate speeds both for bus and auto traffic was a major objective on these streets.

Furman Street, which currently provides only southbound connectivity and capacity, partially completes the Travel Street framework in the northwest of the study area and **Columbia Street/Van Brunt Street** provide two-way connectivity in the southwest of the study area.

Furman Street currently provides access to the waterfront. This function will become increasingly important as the Brooklyn Bridge Park located on the waterfront is developed. The park will bring with it an additional set of traffic needs that must be addressed as the implementation plan for that space is refined. Part of that plan may well include redevelopment and realignment of Furman Street in a way that ensures that its traffic function does not overwhelm the pedestrian environment on the waterfront, while providing continuity and connectivity of the major street network important for the broader travel needs of the area.

Similarly, in discussing draft ideas for the study area, a number of members of the community suggested that **Old Fulton Street** in the Fulton Ferry landing area, while logically forming part of a Travel Street framework in the northwestern section of the study area, should be designated as a Community Street. This reflects its importance as a community resource.

Community Board 6 recommended that in light of its important role for the local community, **Columbia Street** should be managed as a Community Street rather than a Travel Street. This street provides north-south connectivity along the waterfront south of Atlantic Avenue but is also the site of a revitalized mixed-use community.

Finally, all streets in Brooklyn's Central Business District are classified as Community Streets. This reflects the way these streets function within the intensively-used downtown area. This area is bounded by Tillary Street on the north, Flatbush Avenue on the east, Atlantic Avenue on the south, and Adams Street/Boerum Place on the west.

5.3.3 Living Streets

All other streets are classified as Living Streets. This designation recognizes that catering for access to local land uses and activities is more important than providing for traffic traveling through the area.

This does not mean that traffic should be excluded from these streets. Indeed, Downtown Brooklyn's street grid is highly permeable, meaning it provides drivers with multiple choices of routes between origins and destinations. Experience around the world has shown that making travel through a permeable street network more difficult through street closures and localized reversal of flow on one-way streets generally causes as many problems as it solves. The street network becomes difficult to negotiate for those who know it and impenetrable for those who do not.

However, it does mean that the needs of those who live on these streets should be assigned higher priority than the needs of those who travel through them. Of course in conjunction with downgrading the relative importance of through traffic it is important to retain adequate accessibility for emergency service and service vehicles.

5.4 Public outreach

The primary objective of the public outreach program was to harness input from as many sources as possible during each phase of the project, from planning to implementation. Input was focused in a structured manner to allow decisions to be informed by as broad a base of interests as possible. Four public outreach tools were used: information gathering, idea development, pilot program development and implementation, and strategy development.

The major formal mechanisms for public outreach consisted of a project Task Force convened by the Brooklyn Borough President; a Technical Advisory Committee convened by NYCDOT; and subcommittees of Brooklyn Community Boards 2 and 6, the two Community Boards within the primary study area. Community Board 8 also provided input on the secondary study area. Community Boards 2 and 6 referred monitoring of the project to their Transportation Committees. Community Board 6 convened several transportation committee public meetings to review the project strategies. In the latter stages of the project, Community Board 2 convened a task force specifically to address and respond to the draft ideas presented to them.

The outreach approach and process taken and resulting inputs are described below. Organizations represented on the Task Force and Technical Advisory Committee are listed in *Appendix B*.

5.4.1 Information gathering

Like all studies, the Downtown Brooklyn Traffic Calming Study relied on collecting enough useful information to identify problems and to develop a means of addressing them. The information gathering process relied on a partnership between those who know the area best (those who live and work there) and the project team. Residents and businesses have an unparalleled understanding of local issues. A partnership between local stakeholders and the project team was critical throughout the study, but was most important in the early information gathering stage.

For this study, data were gathered in three broad ways: collation and limited collection of hard traffic operational data, discussions with members of the community, and discussions with members of city agencies, including NYCDOT. The data collection process was the subject of an intensive effort at the beginning and continued throughout the study as the project team's understanding of conditions in Downtown Brooklyn evolved. The hard traffic data collected through the study is summarized in *Appendix C* and is contained in the CD provided with this report.

A series of workshops was convened under the auspices of the Task Force and Community Boards to gather data regarding specific problem locations, the needs of Downtown Brooklyn, and the role that individual streets should serve. These workshops yielded many valuable insights into traffic issues in Downtown Brooklyn. Details of those workshops are provided in *Appendix B*.

5.4.1.1 Issue identification

An initial task for the project was identification of issues of concern to the local communities. This process was established through a series of meetings with Task Force members. It should be noted that the issues identified on the following pages (*Figures 5.2 through 5.5*) reflect the perceptions of the attendees of the Issue Identification Meetings and members of the general public. This section simply summarizes the comments provided, and does not reflect any independent verification or analysis of traffic issues raised.

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Pedestrian Safety Issues

- # Intersections
- Corridors

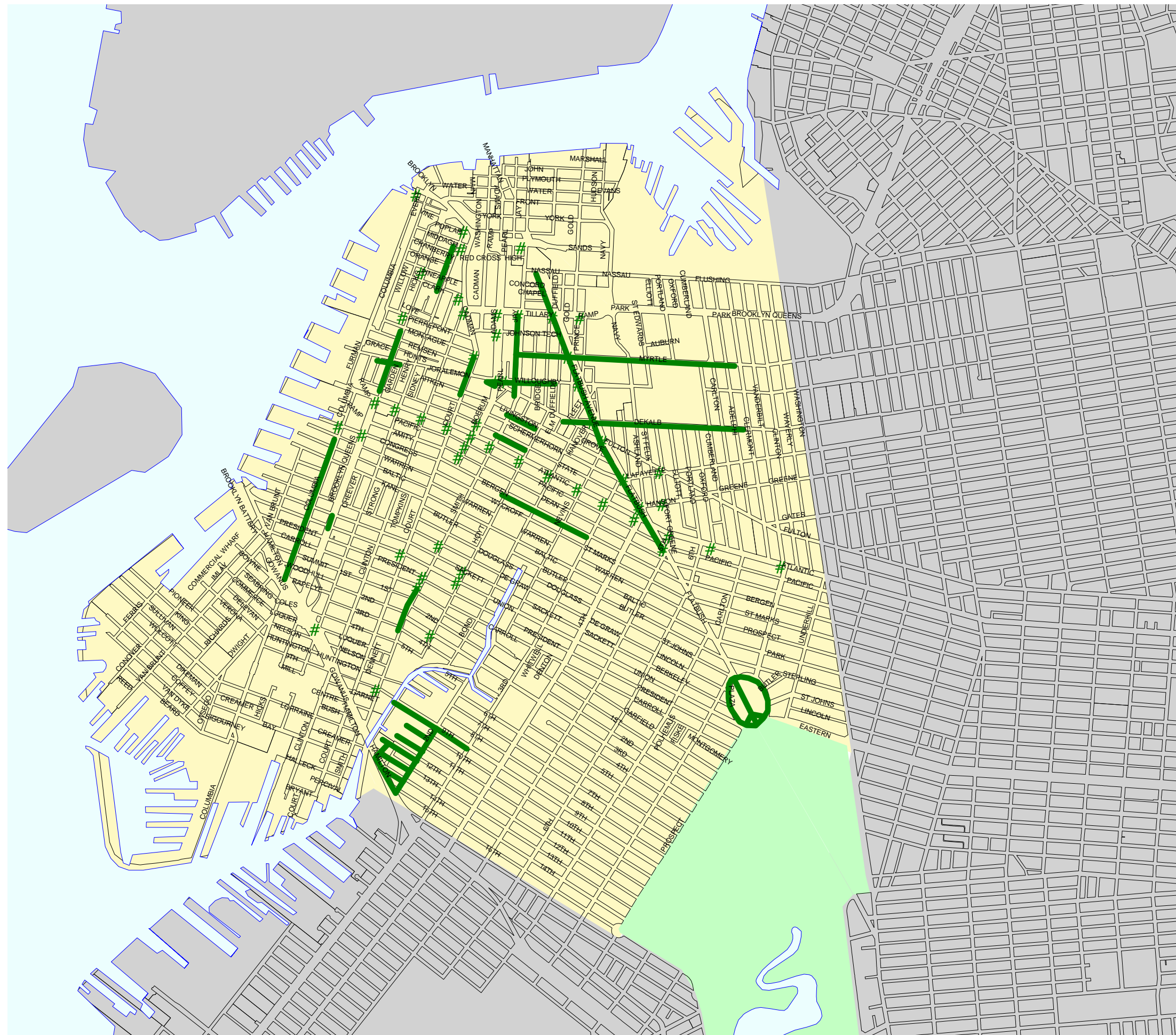
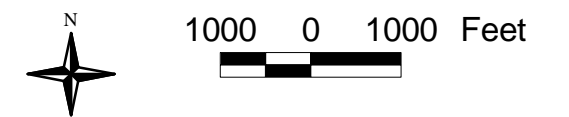


Figure 5.2
Community-Identified Pedestrian Safety Issues



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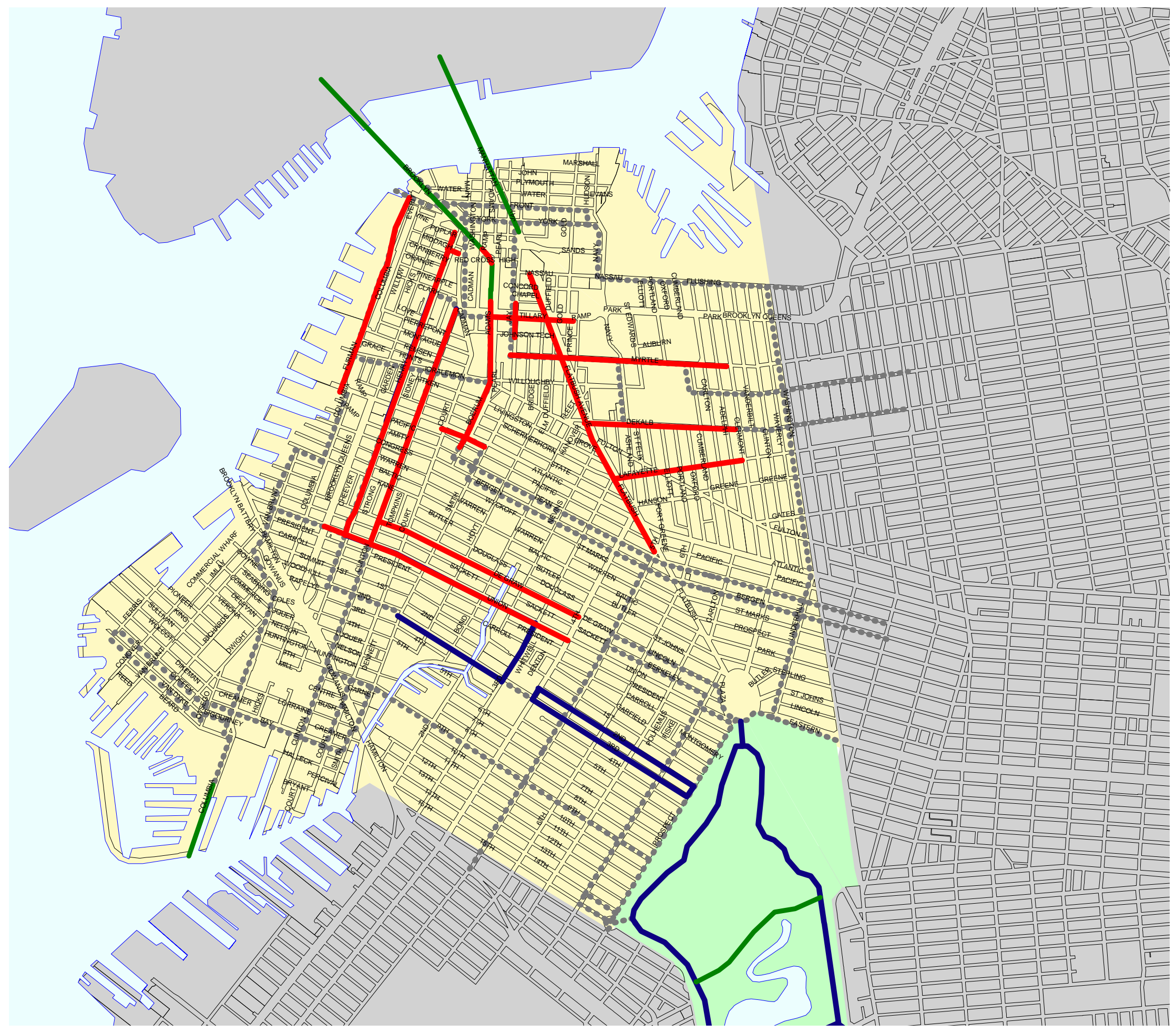
-  Cycling Safety Issues
-  Off-Street Cycling Routes
-  On-Street Cycling Lanes
-  On-Street Recommended Routes

Figure 5.3
Community-Identified
Cycling Issues






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-  Truck Traffic Issues
-  Through Truck Routes
-  Local Truck Routes

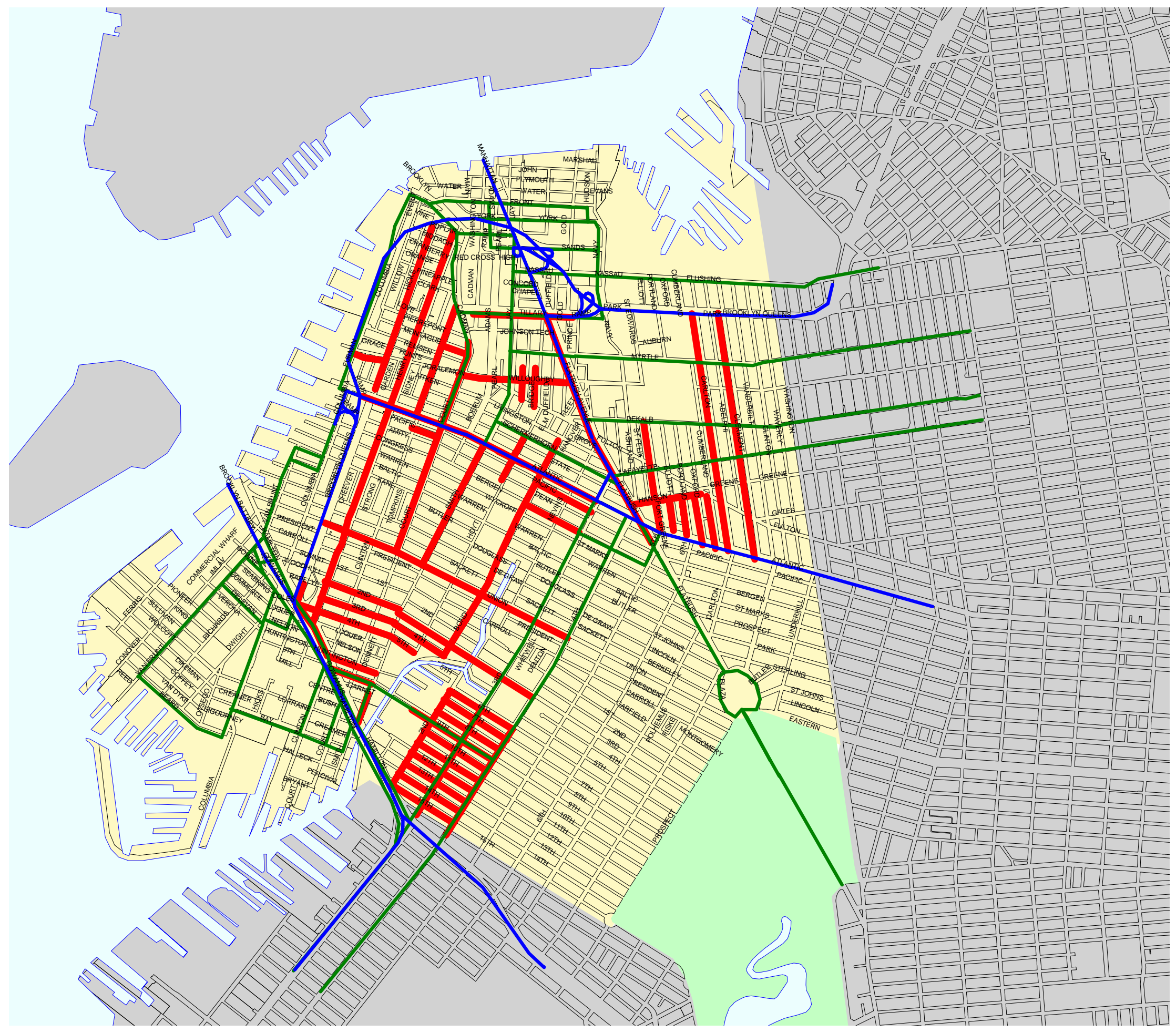
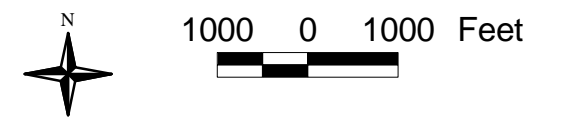


Figure 5.4
Community-Identified
Truck Traffic Issues




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 Vehicle Speeding Issues

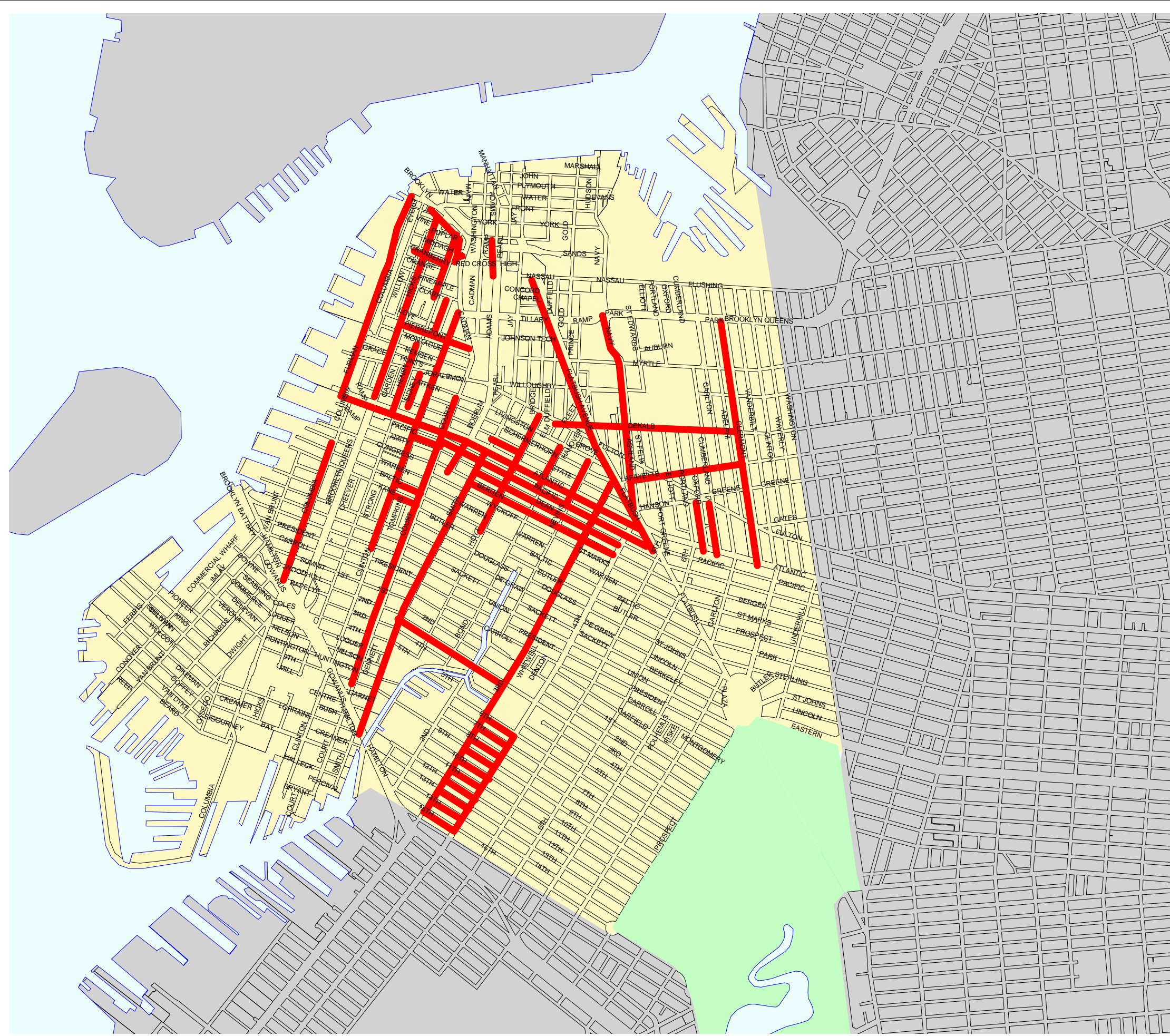
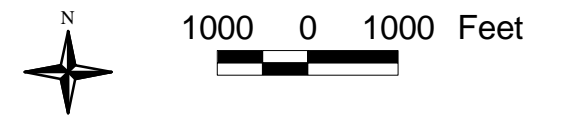


Figure 5.5
Community-Identified
Vehicle Speeding Issues



5.4.1.2 Issue categories

Through the course of the issue identification meetings, it became clear that the issues raised could be grouped into distinct categories. These categories are defined below. Community-identified problem locations for each of these issues, are listed in *Appendix D*.

- pedestrian safety
- through traffic
- congestion
- parking
- vehicle speed
- bicycle safety
- transit issues
- truck issues
- general issues

5.4.2 Idea development

As the project progressed and transitioned from identifying problems to examining potential solutions, interaction with members of the general community also evolved. Information flowed in both directions and contact was ongoing. Accordingly, the format for interaction changed from small homogenous groups with a shared geographic interest to open houses set up to encourage area-wide thinking by creating geographically diverse groups of participants. This format allowed the project team to engage those who were already a part of the process as well as new constituencies. The format is described in more detail in *Appendix B*. Information obtained at the open houses is summarized in *Appendix A3*.

5.4.3 Pilot program development and implementation

Development and implementation of the pilot program was based on community response to the project team's suggestions that were presented to and discussed with the Task Force. Initial ideas for the pilot program were very limited in scope, reflecting the modest budget allocation made in the contract and the project team's view of the pilots' role in the project. However, when the limited scope of the proposed pilot program was discussed, Task Force members indicated they had expected something more substantial. NYCDOT consulted with the other funders of the study and agreed to expand the funding and scope of the pilot program.

An expanded set of pilot program proposals was then developed and provided to Community Boards 2 and 6. Those Community Boards considered the proposals and, with certain modifications, endorsed the proposals. These suggestions were then developed further, installed, and evaluated.

The pilot program represented a major point at which community expectations and the realities of the project differed. The project team explained to the community that the purpose of the pilot program was to test specific treatments, and that locations were chosen because of the ease of

implementing the treatments. The pilot treatments that were proven effective would then be incorporated into the strategy for the entire study area. Nevertheless it became clear throughout the project that some members of the community felt that the pilot program should represent a temporary but comprehensive version of the overall strategy for the area and that the process of moving from the pilot program to the final strategy should be one of reviewing and refining the pilot program and converting temporary installations into more permanent ones.

The project team took pains to explain that the use of temporary treatments was not only unrealistic but also counterproductive; experience around the world demonstrates the adverse effects of temporary physical treatments on the community view of traffic calming. Notwithstanding these efforts, it was not until the draft ideas for the overall strategy were presented that concerns among some members of the community about the commitment of NYCDOT and the project team were allayed.

5.4.4 Strategy development

The final phase of the project revolved around turning the management framework developed with the community and the ideas for managing traffic in Downtown Brooklyn into a coherent strategy. This was achieved by preparing an ideas paper that formed the basis for intense discussion in various forums: a series of open houses, a series of Technical Advisory Committee meetings, meetings with individual agencies and, most importantly, a series of detailed working sessions with Community Board 6's Transportation Subcommittee and Community Board 2's Downtown Brooklyn Traffic Calming Task Force. These meetings provided the forum for creating a draft strategy in a form acceptable to those committees. Committee leaders were able to work with their respective boards and committees and obtain their endorsement. In this way, the normal disagreements on the details of the strategy were dealt with within the subcommittees and were resolved without derailing the overall strategy development process.

This process proved very successful, due in large part to the intense efforts made by the members of Community Board 2's Task Force and Community Board 6's Transportation Committee.