FINAL REPORT
STORM WATER MANAGEMENT PLAN REPORT
VOLUME 1 OF 3

for:

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July 7, 2006

REPORT

TABLE OF CONTENTS

Section Page No.

REPORT VOLUME IDENTIFICATION

LIST OF TABLES

1. EXECUTIVE SUMMARY

The following items highlight the findings, conclusions and recommendations derived for the Stormwater Management Plan. The reader is urged to read the entire Volume I of the report to give better perspective to the following highlights.

1.1 GOALS OF THE STUDY

- Develop a long-range Stormwater Management Plan for the defined areas in York
    - Hydrologic analyses of watersheds
    - Define deficiencies in existing systems
    - Develop a range of mitigation programs
    - Provide recommendations for action
    - Establish approximate costs for mitigation
    - Evaluate potential funding sources

1.2 PROJECT AREA DEFINITION AND CHARACTERISTICS

- Study area – East of Turnpike between York and Cape Neddick Rivers
- Total area - 6716 acres
- Outlet points - 25 (subwatersheds)
- Typical coastal Maine physiography
    - Extensive beach/dune systems at shore
    - Glacial till uplands; shallow bedrock
    - Numerous upland streams leading to beaches
    - Extensive wetlands along watercourses and in ledge pockets
    - Mixed development-mostly residential except along Route 1
- Somewhat scattered and limited area for development
- Limited existing public drain systems

1.3 DEFINED EXISTING SYSTEM DEFICIENCIES

- Evaluation criteria

- Normal minor culverts – 25-year storm
- Culverts on significant watercourses – 50-year storm
- Beach area outlet systems – 50- to 100-year
  - (varies with storm tide conditions)
- Spring tide +6.5' – storm surge 4'

- Upland system deficiencies

  - Inadequate pipe sizing – drain configuration
    - Route 1 culverts
    - Vicinity of Barrell Lane system outfall
    - York Street south end of Long Sands Beach
    - Vicinity of Airport Drive Extension – Cape Neddick

- Major watercourse culverts

  - See Table 3 on following page.
  - See also Appendix C.

- Beach area systems (Long Sands and Short Sands Beaches)

  - Insufficient local drains
  - Discharge culverts significantly undersized
  - Outfall protection marginal
  - Tidal influences are significant

- Inadequate maintenance of existing facilities

  - Inadequate planning for development

The above listed major deficiencies create significant stormwater surcharge and flooding, especially in the low lying areas behind the Long Sands and Short Sands dune systems.

1.4 REMEDIAL ACTION

- Non-structural Elements

  - The Town should take all wetlands as identified on Plan 2 into its conservation easement program – include areas 100 feet back from high water or 2 feet above the high water elevation, whichever is greater.
  - Public easements should be acquired along all significant cross country stormdrains, streams, and watercourses. Secure fifty feet where possible, 20 foot minimum. These easements should give the Town full right of access any time.

- Private development stormwater management should be required on all residential subdivisions or developments over two acres and on all commercial development. It should require that these private plans have a funding mechanism to assure long-term maintenance of facilities. All plans must be reviewed for compatibility with overall Stormwater Management Plan. The Town should have review authority of maintenance in perpetuity. May require ordinance update.
- The ordinances should be modified to prohibit construction of any building or the major modification or enlargement to any building that is not located at an elevation 12 Mean Sea Level (MSL) or higher.
- Individual homes that are considered fill-in units must demonstrate compliance with the wetland setback and elevation restriction conditions defined above.
- All new culverts, or culvert replacements, either public or private should be a minimum of 15" in diameter.

- Structural improvements

  - Upland system upgrades
    - Enlarge Route 1 culvert near Turnpike entrance
    - Provide control structure – enhanced detention – upstream of Route 1 culvert
    - Modify Barrell Lane system – new outfall
    - Enlarge culverts at Outfall P York Street at south end of Long Sands beach
    - Provide new local drain system – Airport Drive Extension – Cape Neddick
  - Major watercourse culvert upgrades
    - See Table 3 for upgrade identification.

  - Beach area remediation
    - Install trunk drains to consolidate flows to four locations
    - Install new outfalls at four locations
      - Headworks
      - Multiple discharge pipes
      - Terminal structure (optional)

    If the system is to remain a gravity flow system, tidal backwater will occur at times of storm surge. Combined with upland flow, water elevation behind the dune could reach elevation of 11 to 12 feet. This elevation would flood significant areas. To fully control beach area floodings, a pumped discharge system will be required to avoid flooding.

  - Install discharge pumps at all outfalls
    - Pumps

- Sluice gates
- Automatic control system
- Power source

1.5 IMPLEMENTATION COST PROJECTIONS

- Non-structural elements $ 200,000
- Upland system upgrades $ 975,000
- Stream culvert/control structures $ 907,000
    - Subtotal – Upland/culvert upgrades $ 1,882,000
- Major facilities at beaches
  See Table 5 – following page
    - Base Program $16,470,000
    - Base + Pumps $31,960,000
    - Base + pumps + terminal stations $35,760,000
- Operation & maintenance (O&M) existing systems - $150,000 - $200,000/year
- Create a stormwater utility $ 100,000

1.6 FUNDING SOURCES

The magnitude of capital expenditures required to fully implement the program is well beyond the normal capacity of a small town.

- Local fund raising sources
    - General taxation
    - Creation of a stormwater utility
- Existing state and federal grant-in-aid programs
    - Flood Mitigation Assistance Project Grants (MEMA)
    - Pre-Disaster Mitigation Program (MEMA)
    - Community Development Block Grants
    - State Revolving Loan Fund
    - Watershed Protection and Flood Prevention (USDA)
    - North American Wetland Conservation (US Fish and Wildlife)
    - Cooperating Technical Partners (HUD and NFIP)

Table 5
Beach Systems Cost Projections

Location		Base Costs	Add Pumps	Add Terminal Structure
Outfall O				
	Consolidation drains	$3,200,000		
	Headworks without pumps	$510,000	$4,000,000	
	Outfall pipes	$1,350,000		$1,200,000
	Subtotal Base Cost	$5,350,000		
	Subtotal Base + Pumps		$9,350,000	
	Subtotal Base + Pumps + Terminal			$10,550,000
Outfall K				
	Consolidation drains	$1,980,000		
	Headworks without pumps	$810,000	$4,000,000	
	Outfall pipes	$1,350,000		$1,200,000
	Subtotal Base Cost	$4,140,000		
	Subtotal Base + Pumps		$8,140,000	
	Subtotal Base + Pumps + Terminal			$9,340,000
Outfall I				
	Consolidation drains	$1,550,000		
	Headworks without pumps	$550,000	$3,000,000	
	Outfall pipes	$820,000		$750,000
	Subtotal Base Cost	$2,920,000		
	Subtotal Base + Pumps		$5,920,000	
	Subtotal Base + Pumps + Terminal			$6,670,000
Outfall G				
	Consolidation drains	$1,900,000		
	Headworks without pumps	$810,000	$4,000,000	
	Outfall pipes	$1,350,000		$1,200,000
	Subtotal Base Cost	$4,060,000		
	Subtotal Base + Pumps		$8,050,000	
	Subtotal Base + Pumps + Terminal			$9,250,000
Total Program		**$16,470,000**	**$31,460,000**	**$35,760,000**

NOTES: Costs include 10% construction contingency + 25% engineering & technical services.
Costs Include allowance for watershed instrumentation.

- Special federal funding

The local funding sources may support the suggested increase in O&M funding, implementation of the recommended non-structural actions, and perhaps remediation of local upland system problems. Limited aid may be available from the traditional governmental funding sources to upgrade main watercourse culverts with installation of control structures where backwater detention is planned.

Accomplishment of major construction at the beaches will require supplemental federal aid through some source such as "earmarking" legislation, or special demonstration grant funds. It will be necessary to work through the congressional delegation to evaluate these special funding sources.

1.7 SCHEDULING

Some elements of work can be reasonably scheduled at this time, while major beach area construction is dependent on special funding. The following is recommended for the immediate future.

- Accomplish all non-structural elements 2006-2009
- Accomplish local upland system upgrades 2007-2009
- Upgrade stream culverts with control structures 2007-2009

1.8 RECOMMENDATIONS

- Accomplish all non-structural elements as soon as possible (see Section 6.2.2, page 6-2)
- Apply for state and federal funding support under existing programs
- Accomplish priority upland system upgrades
- Create a stormwater utility for the defined study area
- Increase budget for drainage system O&M to $150,000-200,000/year
- Meet with Maine Turnpike Authority to explore detention potential west of Turnpike
- Upgrade and install control structures at locations where detention is available

- Upgrade designated non-detention culverts
- Consider placement of a removable barrier system across Short Sands parking lot in the winter to provide some protection from surge/wave overtopping
- Implement upland system upgrades as funding permits
- Meet with congressional delegates to explore avenues of supplemental aid
- Implement beach program when funds become available
- Establish long term savings plan for beach area proceeds

The total base program including non-structural elements, the upland system upgrades, the culvert/control structure upgrades and the base gravity outfalls (without terminal structures) at the beaches is projected at about $1,850,000.

2. INTRODUCTION

The Town of York is a coastal community in southern Maine. Typical of such communities, York has been subjected to significant growth pressures. The attributes of the community include easy access from the Maine Turnpike and its direct link to the Greater Boston Metropolitan area. In addition, the extensive beaches at Long Sands and Short Sands have long been an attraction to summer visitors.

Stormwater runoff, especially along the beach areas, has been an ongoing problem for many years. This is evidenced by historic records and photographs. Photos showing the chronic flooding problems in the beach areas are illustrated in a series of photos on the following pages.

As development has accelerated, the stormwater runoff problems have also increased. In the upland areas, commercial and residential run off rates have placed higher peak flows in the natural water courses. In the vicinity of the beaches, additional development has taken place in flood prone areas.

The Town recognized these growing problems in the mid-1970's. In 1977 the York Beach Village Corporation retained the firm of Cleverdon, Varney & Pike to prepare a brief conceptual plan for remediation of flooding problems. This plan suggested several pump stations to transfer upland flows to the ocean. However, the cost of implementation and the availability of funds precluded any actual construction.

In early 2004, the Town requested that Environmental Engineering & Remediation (EER), now Edwards and Kelcey, undertake a general overview of the stormwater conditions in the Town and to prepare a Memorandum of Guidance for use by the Town in developing a comprehensive Stormwater Management Plan. This Guidance Memorandum was presented to the Town on January 16, 2004.

After review by Town officials, the Town requested the consultant to prepare a Scope of Services that would implement the recommendations of the Guidance Memorandum in a phased approach as funding and the required technical data became available. Edwards and Kelcey was authorized to begin the program in June, 2004.

The initial year of the program was largely spent in general technical data assembly and review. Upon completion of data assembly, the technical analyses have been proceeding to establish realistic design conditions based on these hydrologic projections. Schematic design of the primary remedial measures has been accomplished.

This report presents the data and recommendations developed for remedial action. The report will be finalized after review of this edition by Town officials and the Town Council.

HISTORIC PHOTOS

MAY 2006 PHOTOS

3. EXISTING CONDITIONS

The area of interest defined for this study is that portion of Town east of the Maine Turnpike (I-95) to the ocean, between the York River and the Cape Neddick River. This area is shown on a USGS plan following this page (Fig. 1). The topography and geology is typical of the glacial coastal plain of Maine. The ridges and upland areas are glacial till overlying shallow bedrock. The area is cut by numerous small streams in the valley areas. These lowland areas have extensive wetlands along the streams and in depression in the bedrock.

The retreat of the glacier left extensive sand dune deposits and sand beaches along the coast in what is known as the Long Sands and Short Sands Beaches. These beach dunes serve as a barrier to upland runoff trying to reach the ocean. Many years ago the barrier dunes were developed to carry roadways (U.S. Route 1-A), to support extensive development abutting the highway, and in low lying areas behind the dunes.

The general topography and geologic conditions have created very complex hydrologic systems. Fortunately in recent years, advances in computer technology have made hydrologic modeling of such watersheds possible. Such modeling and analysis are vital to the development of a realistic remedial action program. However, it must be noted that hydraulic modeling under such complex physical conditions is not a precise science and a good deal of professional judgment must be applied when utilizing the output data.

The major stormwater problems that exist today include extensive flooding of developed areas lying behind the roadways built on the old dune system. Culverts have been installed under the highway/dune system to allow upland flow to escape to the ocean. As flows have increased over the years, these culverts have become too small to be effective. Most importantly, all of these culverts are subject to tidal influence, especially during storm events. As a result of increased upland flow approaching the beaches and reverse tidal flow through the culverts, substantial areas behind the dunes at both Long Sands and Short Sands are subject to significant flooding. The photos in the prior section illustrate typical conditions.

The second significant stormwater problem is the backup and flooding along the upland streams. The flooding is created by natural watercourses being restricted in carrying capacity due to extensive vegetation and encroachment of development. In many instances the culvert sizes on roadways crossing the streams are undersized. Much of the stream water backup and flooding occurs in natural wetland areas. However, in some areas, where development has encroached too closely to wetlands, residential flooding occurs. The undersized culverts are also a benefit as they do detain water in the wetland areas, thus reducing peak runoff rates.

In the more urbanized upland areas of the Town, existing drainage is carried in roadway gutters and limited formal piped drainage systems. These gutter/drain systems generally discharge to the nearest watercourse and flow overland to the ocean or rivers. While the existing urban area drainage systems do not provide efficient overall stormwater removal, they generally create only minor inconvenience and maintenance problems (except as noted below) as opposed

to major flood problems at the beaches. Expansion and upgrading of these urban systems will likely take place over a period of years as funding may be available. The more urgent needs in the beach areas will take priority.

Problems in the upland drainage areas that warrant early remedial action include:

- Route 1 undersized culverts
- Barrell Lane system outfall undersized
- Culverts on York Street, south end of Long Sands Beach undersized
- Local drain system – Airport Drive Extension, Cape Neddick inadequate

4. DATA ASSEMBLY

To enable realistic hydrologic evaluations of the complex watershed conditions in York, it was necessary to assemble extensive topographic, photographic and physiological data for the subject watersheds.

The Town retained Bradstreet Consultants Inc. to take up-to-date aerial photos of the project area and to prepare two-foot contours. This data was utilized to define watershed and subwatershed limits. Due to the diverse land forms in the area, watershed delineation was difficult and time consuming. The aerial photos were also used by the Town as a GIS base where zoning, land use patterns and wetland delineation could be graphically illustrated. The data is such that any scale desired can be produced.

Considerable detail that cannot be determined by photogrammetry had to be field assembled. This data included location and documentation of all major culverts, inlets or other pertinent drainage features. This data was assembled in the field by the staff of Edwards and Kelcey. This data has been integrated into the Town's GIS system. Appendix C of this report presents the culvert data in printed form. A computer disc is also provided to allow the Town immediate access to the data. Culverts needing immediate upgrade are identified later in this report.

Oceanographic and tidal data were established by NOAA and published by "Maine Harbors." Sand dune designations and status were obtained from published data of the Maine Geological Survey. Potentially applicable environmental regulations were obtained from the Maine Department of Environmental Protection (DEP). Soil characteristics and runoff potential were established from the medium intensity soils mapping accomplished by the York County, Soil and Water Conservation Service.

5. HYDROLOGIC EVALUATIONS

5.1 ANALYTICAL PROCEDURES/CRITERIA

As noted in previous sections, the topography and drainage patterns in the coastal sections of the Town are quite complex. Hydrologic analysis of such watersheds requires computer modeling of existing and future conditions. Edwards and Kelcey utilized HydroCad 7.10 (©2005 HydroCAD Solutions LLC) for basic evaluation of the York watersheds. The input data required to run the model were obtained from the recent aerial photos and topography, general Town mapping and extensive field reconnaissance. The watersheds and outfall locations are shown on Plan 1 in Volume 2 of this report.

It must be recognized that computer modeling of complex watersheds is not an exact science and projected flows can vary significantly depending on the accuracy of input data and the level of detail in defining sub-watersheds. The model data presented in this report is based on Edwards and Kelcey's best judgment on appropriate input data, consistent with the scope of the study, and careful review of output data to assure its reasonableness. To assure reasonableness, the peak flows at the major outfalls were checked by other methods utilized by MDOT (Rational and USGS) drainage analyses.

The runoff from any area will vary with the amount of rainfall that falls on the watershed. Intensity of rainfall is determined by detailed analysis of actual rainfall records taken at various first order weather stations. The U. S. Government has completed such evaluations and can predict the intensity of rainfall that is likely to occur over a 24-hour period for various return frequencies. A return frequency is simply a statement of how often such an event should occur, i.e. a five-year frequency storm should occur once every five years, etc. It must be recognized that statistical projection are not always adhered to by Mother Nature, witness that three 100-year storms have occurred in the last 25 years.

For this study, flow projections based on 25-year, 50-year and 100-year frequency storms have been adopted. Lesser intensity storms do not have significant flooding impact. Upland drain systems would be based on a 25-year storm event while the 50- and 100-year storm events would be used for the major systems at the beach. Of note, the storm of May 12-13, 2006 is estimated to exceed a statistical 500-year storm event. Volume 3 of this report presents a detailed summary of the computer modeling.

5.2 EXISTING CONDITION ANALYSES

Existing condition flood flow projections are based on land use in the watershed as it exists today. The watercourses were modeled in their existing condition and current culvert sizing as determined by field reconnaissance.

Plan 1, in the accompanying plan set shows the watershed areas tributary to each discharge point in the study area. In addition to individual watersheds, those that are likely to be

consolidated as part of any mitigation program have been further highlighted. There will be three points of consolidation along Long Sands and one at Short Sands. The total drainage area of each watershed is shown in Table 1.

Table No. 1
Watershed Data

Watershed	Discharge Point	Total Area
A	Cape Neddick River	479.6
B	Cape Neddick River	342.3
C	Cape Neddick River	187.1
D	Cape Neddick River	75.7
E	Cape Neddick River	46.8
F	Short Sands Beach	49.4
G	Short Sands Beach	582.5
I	Long Sands Beach	98.0
J	Long Sands Beach	332.2
K	Long Sands Beach	470.5
L	Long Sands Beach	256.6
M	Long Sands Beach	83.9
N	Long Sands Beach	10.0
O	Long Sands Beach	1746.8
P	Long Sands Beach	263.0
R	York River	128.5
S	York River	199.0
T	York River	127.3
U	York River	379.6
V	York River	69.4
W	Turnpike Culverts	59.1
X	Turnpike Culverts	116.7
Y	Turnpike Culverts	61.3
Z	Turnpike Culverts	164.3
	Total Combined Area	**6716.2**

Plan 2, in the accompanying plan set shows the current zoning within the study area. General existing land use can be identified from the aerial photos. Significant wetlands which

will affect storm water runoff are also illustrated. The wetlands highlighted in blue are those in which existing culverts create de facto detention areas, or supplemental detention is proposed.

The current study is based on a USGS datum of mean tide equals elevation 0. Normal low tide is about elevation -4.6 while normal high tide is about elevation +4.6 feet. A naturally occurring "spring" tide will be about 1.9 feet above normal high tide, that is about elevation 6.5 feet.

Surges occur at the shore during storm events when high winds tend to drive the water shoreward. Along the Maine coast this is typically an East or Northeast wind. These surges will vary with the intensity of the storm, its duration and wind direction. Hurricane surges can easily exceed 10 feet. For the purpose of this study Edwards and Kelcey adopted a 4-foot storm surge. This does not consider wave action at the shore. If the storm surge coincides with a spring tide, a highwater elevation of about 10.5 to 11 feet can be anticipated.

It is noted that many upstream culverts at road crossings are not sized to carry the projected flows without significant surcharge. These culverts create de facto detention areas along the watercourses. This de facto detention significantly reduces the peak downstream flow rates. If these culverts were upgraded to carry higher flow and other control means were not installed, the flow arriving at the beach will be increased significantly. As discussed in later sections, retaining the wetlands and enhancing their detention capacity is vital to the Town's overall stormwater management program. The flow projection assumes continued use of, and enhancement where possible, of the detention inherent in the existing wetland areas.

In some locations the culvert surcharge may not create a problem as the flooded area may be a wetland. However, in other situations the culvert surcharging may be detrimental. The key surcharging culverts should be evaluated to determine if upsizing is beneficial to the overall program, or if the restrictions on flow they represent should remain in place. Culverts that create a backwater that will top this road are identified for upgrading.

As to be expected, the most severe drainage problems occur at Long Sands and Short Sands where serious, damaging flooding occurs during storm events above a certain intensity. In these areas the hydraulic analyses reveal the problem to have two root causes. First, the runoff from the upland areas for storm events of 25-year frequency cannot pass through the dune system to the ocean. The culvert sizes are simply too small. Secondly, the tidal elevation at the time of peak runoff has a significant impact on the carrying capacity of the discharge culverts.

Tidal conditions have a great impact on flooding potential behind the dunes at Long Sands and Short Sands. If there were little upland flow reaching the beaches, the ocean would reverse flow through the culverts and could bring water elevation behind the dunes to 10 to 11 feet. Significant areas behind the dunes, including developed areas, are below this elevation. If a significant upland flow arrives at the beaches concurrently with a higher than normal tide, the problem is exacerbated as the upland flow cannot pass to the ocean without creating an additional surcharge of several feet. Elevation 12 could be reached under extreme conditions. These conditions can create very severe flooding. Thus, the design of any remedial action

program must consider the tandem influences of excessive upland flow and tidal conditions at the beaches. Volume 3 of this report presents a summary of hydrologic study printouts.

5.3 FUTURE CONDITION ANALYSIS

The intensity of runoff for any watershed will depend on its state of development. As development takes place and land use patterns are altered, the runoff rates will increase.

Design of remedial measures must try to anticipate the development and changes in land use which may occur over the design life of the facility. Even though projection of growth beyond a 10 year period is of limited value, some judgment decisions must be made to assure reasonable allowance for future conditions in any design process.

Edwards and Kelcey staff met with the planning director of York to discuss growth potential in the critical watersheds. It was noted that extensive wetland areas exist throughout the watersheds. Development must not encroach into the wetlands. The upland areas throughout the watersheds are relatively small and somewhat isolated from each other. The planning director felt that these conditions are not favorable to large scale developments, and thus, most development would be of the scattered residential type. Should a large residential or commercial development be proposed, it would have to have its own storm water management plan which would control offsite runoff to preconstruction conditions. This requirement for private development will be a key factor in preventing conditions from deteriorating further. These individual stormwater management programs must be coordinated with this report, as some development in the lower parts of the watersheds may not require detention. In these areas, it may be desirable to pass flow to the ocean as quickly as possible.

Based on these discussions it would appear that future development in the critical watersheds tributary to the beaches will be somewhat limited in relationship to the size of the watersheds, and the major development would require its own stormwater management system. Conservative design based on existing condition flow projections for the area would appear to be appropriate. Recommendations for action are included in later sections.

6. REMEDIAL ACTION PROGRAMS

6.1 GOALS OF REMEDIAL ACTIONS

The primary emphasis of any remedial action program must be placed on mitigating the serious flooding problems that occur in the Long Sands and Short Sands beach areas. This flooding causes major damage to homes and businesses and creates serious disruptions to the Town's economy. The secondary thrust of the mitigation programs is to contain upland flooding to low land and wetland areas in a manner that will not cause damage to adjacent property, and will not damage public infrastructure. Critical upland culverts and outfalls that are currently creating localized flooding problems must also be addressed.

The solution to these problems will not be easy or fully accomplished in a short time frame. A large amount of public investment will be required together with modification in public policy. That may not be popular with all segments of the population.

The goal of the remedial action programs is to accomplish the desired level of flood control as cost effectively as possible, in a manner that will be acceptable to the citizens of the Town, and can be permitted under state and federal regulations.

6.2 NON-STRUCTURAL ACTIONS

6.2.1 Discussion of Non-structural Elements

An effective storm water management plan will have two components, i.e. a series of non-structural actions which can be taken to lessen the runoff that must be handled, and a structural component to actually transport the incoming flow to a safe disposal point.

As discussed in the prior section on hydrology, the existence of substantial areas of wetlands in the watersheds tributary to the beach areas are extremely valuable in reducing peak flows that arrive at the beaches. Without these wetlands the peak flows would be much larger than those predicted. In the past it was common practice to fill and encroach on wetlands for development. This has happened in wetlands adjacent to the beach dunes. Fortunately, encroachment into wetlands away from the beaches has been generally limited. In the past 25 years the importance of these wetlands has been recognized and federal, state and local statutes have regulated the use of wetlands. The Town of York has initiated a program of establishing conservation easements over critical wetlands.

The hydrologic investigations made have identified wetland areas that currently serve as stormwater detention areas. These are shown in light blue on Plan 2 of the accompanying plan set. Also shown on the plan are wetland areas that are not now serving as significant detention areas, but do serve to dampen peak runoff and could possibly be used for added detention.

It is vital that all of these wetlands be protected in their existing state. Any development or alteration of these wetlands would have significant adverse impact on peak runoff. It is recommended that the Town expand its conservation easement program to include all identified wetlands, both those currently serving as detention areas and those which simply dampen outflow. The easements should extend to a point 100 feet from the edge of the wetland, or to a point where the elevation is 2 feet higher than the projected high water elevation of the wetland, whichever is the greatest. It is also recommended that public easements be obtained along all major streams or water courses to prevent further encroachment from development that could diminish their flow capacity. Where possible these easements should be 50 feet in width.

Although large, intense development in the watersheds is expected to be limited, any development in excess of 2 acres should be required to have a storm water management program established during the planning process. This local watershed management plan must be fully coordinated with the overall hydrology of the watershed. Any local plan that includes a storm water detention pond must also include a long term operation and maintenance provision. This must include a legally binding process for securing funds for any necessary maintenance. This could be via legally established property owner associations, or a process of tax surcharge under which the Town would maintain the facilities. The Town's subdivision and land use ordinances should be reviewed to assure that provisions for creation of local storm water management plans and their long term operation and maintenance are assured. It is also recommended that all culverts, either public or private, be a minimum of 15" in diameter.

In the areas behind the beach dunes it is recommended that no building be allowed to be built or expanded in size, where the ground elevation is less than 12 feet, USGS base. Elevations below this may be subject to flooding even with extensive structural mitigation measures.

6.2.2 Water Quality Impacts

The beaches at Long Sands and Short Sands are a major asset of the town and it is important to keep the water quality and esthetics of the beaches at acceptable levels. Stormwater runoff normally carries a significant pollutant load including silt, bacteria and various hydrocarbon chemicals. It is not possible to provide formal treatment to all flows being discharged to the beaches, however, if all of the wetlands are preserved, they will serve a valuable function of filtering and absorbing many pollutanta as the runoff passes through them. Thus, in addition to the hydrologic flow damping the wetlands serve a significant water quality function.

6.2.3 Summary Statement of Non-structural Actions

- The Town should take all wetlands as identified on Plan 2 into its conservation easement program – include areas 100 feet back from high water or 2 feet above the high water elevation, whichever is greater.

- Public easements should be acquired along all significant stormdrains, streams, and watercourses. Secure fifty feet where possible, 20 foot minimum. These easements should give the Town full right of access any time.

- Private development stormwater management should be required on all residential subdivisions or developments over two acres and on all commercial development. It should require that these private plans have a funding mechanism to assure long-term maintenance of facilities. All plans must be reviewed for compatibility with overall Stormwater Management Plan. This may require ordinance updates.

- The ordinances should be modified to prohibit construction of any building or the major modification or enlargement to any building that is not located at an elevation 12 MSL or higher.

- Individual homes that are considered fill-in units must demonstrate compliance with the wetland setback and elevation restriction conditions defined above.

- All new culverts, or culvert replacements, either public or private should be a minimum of 15" in diameter.

6.3 STRUCTURAL ACTIONS

6.3.1 Discussion of Structural Actions

6.3.1.1 Upland Structural Improvements

The hydrologic studies are based on maximum utilization of wetlands for detention of stormwater, thus reducing peak flows downstream. The hydrologic analyses indicate that at some culvert crossing locations, backwater would overtop the road. In other locations, the culvert backwater did not cause road overtopping, indicating that the pipe was reasonably sized, if inlet condition remained clean. To assure that the detention capacity of wetland areas is achieved, formal headwall and control structures should be installed on all culverts where detention is to be achieved. At locations where road overtopping would occur, the culvert would also be enlarged.

It is noted that the Maine DEP normally discourages ponds on wetlands for detention. In the case of York, many of the wetlands have been serving as de facto detention areas for many years. It would seem reasonable to allow continuation of this beneficial use of the designated wetlands.

The inventory of existing culverts (Appendix C) also identified culverts that are in poor condition, have poor entrance or exit conditions, or some other deficiency that would dictate replacement. A listing of proposed culvert upgrades is included in Section 6.3.2 Summary Statement on Structural Actions.

The watersheds have been reviewed to determine if additional detention could be reasonably provided. One area that could be considered for additional detention would be areas west of the Maine Turnpike. Providing detention in these areas would require construction of control structures on the inlets to the Turnpike culverts, and would place water directly against their roadway embankments for short periods of time. Also as this area has not served as a de facto detention facility in past years, the Maine DEP would likely require permitting, if compatible with regulations. Normally they discourage ponding of wetlands for detention.

For these reasons, detention west of the Turnpike has not been included in the hydrologic analysis. If the Town wishes to approach the Turnpike for consideration of such detention, the analysis could be adjusted.

Additional detention is proposed upstream of the major Route 1 culvert in the Outfall O watershed. This will require a control structure on private property and rights of access.

There are other significant wetland areas that are not considered for additional detention. In these cases the elevation of the wetland is very similar to existing residential areas and any raising of water level would in itself cause flooding.

A special condition exists at Short Sands Beach where the northeast orientation of the cove creates significant storm surge that, when combined with wave action, causes seawater to cross the parking lot on the old dune system to flood adjacent streets. Discussions with the Maine DEP reveal that the State will not permit any installation of a seawall to protect against surge or wave action. However, they indicated that it may be possible to raise the elevation of the parking lot by placing dune sand and rebuilding the parking lot on top. However, without some sort of structural protection on the newly placed sand, its long-term stability may be questioned.

As most of the high tide surge and wave action occur during the winter months, it may be possible to consider installation of temporary barriers on the parking lot that could be removed in the spring. This type of system may not prevent all surge overtopping, but could lessen its frequency and severity.

Several other upland drainage problems have been identified through discussion with Town officials. These include drainage from the small pond/wetland area on Airport Road Extension in the residential neighborhood on Cape Neddick. Resolution of this problem will require installation of a new properly sized outfall and some ancillary piping. This outfall should not be affected by tidal action. A schematic plan of this drain upgrade is shown on Figure 2, attached as Appendix A of this report.

The new system will provide a 36” drain from the low point in Airport Drive Extension extending to Broadway, thence to a new outfall. The existing wetland/pond area that provides some detention will overflow to the new system.

The area served by Outfall P at the south end of Long Sands beach is undersized and causes backup and area flooding during storm events. The outlet culverts should be enlarged to

carry projected peak flows. This outfall may be marginally impacted by extreme high tide, but it should essentially act as a free-flowing outlet. Outfall P is currently a series of 36" RCP's which outlet to the ocean at approximately eight feet. There is an existing detention area that is controlled by a 36" cross culvert flowing under a private drive (Culvert 195) to a channel then crossing under York Street before entering the outfall structure.

The private drive crown elevation is slightly less than 14' and currently the detention area on a 25-year storm event reaches an elevation of 14.11' and 14.5' on a 50-year event. With the ocean being so close the apparent solution is to increase the culvert size to allow free flow directly to the ocean. It is proposed to replace the existing (3) 36" culverts with new 60" x 38" elliptical concrete pipe. This will lower the elevation in the detention area to 13.29' on a 50-year storm event and prevent any flooding from encroaching on abutting residences. A schematic plan of this drainage upgrade is shown on Figure 3.

The area tributary to Outfall R flows to the York River via Barrell Lane. This system is undersized and must be upgraded. The existing catch basin next to Barrel Lane has very poor inlet conditions and should be replaced to improve hydraulics. The existing 36" outlet flows through two other structures and over 215' of 36" pipe before discharging to the York River. With the upstream stormwater runoff discharging directly into Catch Basin 286-50 and the addition of downstream flow from adjacent structures, the existing 36" culvert is not adequate during large rainfall events.

It is proposes that Catch Basin 286-50 be replaced with a sizable structure to accommodate inflow requirements, with a new 36" outlet to the river. The proposed 36" outlet will have a lower invert elevation to accommodate the upstream flow. The existing 36" outlet will be retained for overflow. The proposed outlet can be installed on public property, adjacent to the pump station, and outlet in close proximity to the existing outlet. This upgrade is shown in Figure 4.

Culvert 126 crosses Route 1 next to the on and off ramps of Interstate 95. The existing 18" culvert is not adequate for stormwater runoff greater than a 25-year storm event. A private pond discharges to the culvert on large storm events causing a surge of flow directly to culvert 126 and flooding out Route 1.

Due to elevation and property restrictions there is no immediate solution to effectively control the runoff. A proposed 36" culvert would more than double the capacity and reduce the flooding of Route 1 on large storm events. A structure with a weir is also advised to control the overflow discharge from the pond. This will require access to private property. Figures 5 illustrates this proposal.

A second culvert under Route 1 near the Turnpike entrance should be enlarged. An extensive review of Culvert 82 and the corresponding detention area 5P was completed to determine a possible solution to the flooding of Route 1. Current stormwater runoff is detained behind Culvert 82 in a low area that does not provide adequate storage for any rainfall frequency

event above a 50-year storm. Currently the standing stormwater elevation on a 50-year storm is 39.49 feet with Route 1 being at elevation 39.2 feet.

Reviewing options to lower the elevation below flood conditions has led to controlling detention upstream and reducing the peak flow to Route 1. Increasing the capacity of Culvert 82 was considered, however, not advised due to downstream infrastructure and conditions.

The area recommended for detention is a low lying, flat, forested wetland with over 38 acre-feet of storage capacity. Currently the area slowly meanders through the wetland to Reach 73 where it travels to Culvert 82. A proposed structure, consisting of an orifice and weir, is to be placed at the mouth of the wetland in order to control peak flows and detain within the wetland. The location of the proposed orifice weir structure is on private property. An access drive must also be installed on access the site. The detention area is shown on Figure 7.

The drainage areas that flow directly to the Cape Neddick River rather than to the beaches appear to pass flows to the river without significant problems. However, there is significant potential development property in these watersheds that could alter conditions unless the non-structural recommendations are adopted.

6.3.1.2 Beach Area Structural Actions

Even with accomplishment of all of the non-structural program elements discussed in the forgoing, the existing outlet drain infrastructure at the beaches is grossly undersized and major structural improvements must be made. As discussed in the hydrology section all structural improvements at the beach must consider both the upland flow that must be passed and the influence of tide levels. At low tide conditions, outfall pipes will act as free discharge culverts. At high tide conditions the pipe will be submerged and will have significantly different hydraulic characteristics.

Normal spring tide levels of about 6.5 feet (MSL) occur several times a year. The frequency of storm surges that raise the tide levels are known to occur, but are most difficult to predict. Storm surges of up to 4 feet are not uncommon but their frequency of occurrence cannot be predicted. Hurricanes or tropical storms that could raise sea levels significantly occur, but are less frequent. The most critical conditions would occur when a spring tide coincides with a storm surge and high upland runoff. The return frequency of such a combination of natural events cannot be predicted. Thus, the actual natural conditions adopted for design must be subjected to a good deal of judgment.

For the analyses of this report the following critical conditions have been assumed; coincidental occurrence of a spring tide of 6.5 feet, a 4 foot storm surge and an upland flow approximating a 25 year to 50 year storm. Also the facilities should pass a 100 year storm flow at a normal high tide of 4.5 feet. The proposed facilities should be designed to pass the designated flow, while creating a backwater elevation not exceeding 10 feet (MSL). This will allow some localized flooding. Also it is noted that if a gravity outfall is used the surcharge backwater could approach 12 feet.

Accomplishing the above criteria will be a significant design challenge. The key decision on any outlet system will be the use of gravity flow only, or the use of supplemental pumping facilities to maintain backwater depths to whatever level is desired. Any storm tide that reaches elevation 9 feet will create some backwater behind the beaches, regardless of upland flow rates. A gravity discharge system will require an additional head to push any upland flow though the outflow pipes. Depending on the coincidence of natural conditions, a gravity outlet system would likely create a backwater elevation of 11 to 12 feet. This is the rational for restricting buildings to elevation 12 or above.

The only way to assure backwater will remain below a flood level of 8 feet will be the installation of discharge pumps. This was recommended by Cleverdon Varney and Pike in the 1970's. Both gravity and pump systems have been considered as part of this study.

Currently there are eight substantial stormwater outfall locations along the beaches. These are shown on Plan 1 in the accompanying plan set. As all new outfall structures will be expensive it will be desirable to consolidate the flows to eliminate some outfalls. Hydraulic studies have indicated that the upland flows at Long Sands can be consolidated through a series of trunk drains to three discharge locations. These are designated as Outfalls I, K, and O. At Short Sands beach, flow can be consolidated to one location, Outfall G. The installation of trunk drains behind the dunes is also necessary to provide localized drainage facilities in the very flat areas that currently exist. Additional street drains can be installed to further expand service in the future as funds may become available.

6.3.1.3 Consolidation Trunk Drains

Through use of aerial photos, topographic maps and field recognizance the tentative routings of the trunk storm drains have been established, one system for each designated major outfall. A schematic layout of the trunk drains delivering flow to Outfall O is shown on Figure 8 in Appendix A. The main trunk drain generally follows the low area behind the beach. In some areas the drain will be located in public streets, while in other areas rights-of-way across private property will be required. Due to the features of the area and the limited cover available for drain installation, the design must use an elliptical pipe with the long axis laid horizontally. A slope on the pipe of only 0.2% will be available and cover in some places may be limited to 18 inches.

Southerly of Outfall O, a trunk drain will be extended to Beachwood Ave. Trunk drains will be installed westerly in Beachwood and Surf Avenue to the vicinity of the brook at the head of the streets. These drains are also shown in Figure 1. At this location special inlet structures should be provided to allow brook flow entry if the water level exceeds an elevation of 9 to 10 feet. Theses inlets are required as development and vegetation have encroached into the natural channel to restrict flows.

As the proposed trunk drains will be of considerable size and at shallow depths there will undoubtedly be conflicts with existing underground utilities. While final design will try to minimize the conflicts, some relocation of existing utilities will undoubtedly be required. More

detailed plans and profiles of the above described trunk drains are shown on Plan 3 of the accompanying plan set. The system as illustrated on the schematic drawing and plan will concentrate runoff at Route 1-A in the vicinity of the existing culvert designated existing Outfall O. More detailed plans and profiles of this trunk drain are shown on Plan 4 of the accompanying plan set.

A schematic diagram of the trunk drain consolidating flows to Outfall K is shown on Figure 9. Again the pipe sizing will be based on elliptical pipe laid at minimal grade with shallow cover. A portion of the drain will run along the shoulder of RT 1-A to carry flow from Outfall L back to the Outfall K location. Inlet stubs will be provided to the wetland areas to minimize backup and protect adjacent buildings. More detailed plans and profiles of this trunk drain are shown on Plan 4 of the accompanying plan set.

A schematic diagram of the trunk drain consolidating flow to Outfall I is shown on Figure 10. The pipeline characteristics for this drain system will be similar to those described at Outfalls K and O. However, the drain alignment is somewhat more complex due to the street and development patterns in the area. In some locations drains will have to be located quite close to buildings. More detailed plans and profiles of this trunk drain are show on Plan 5 of the accompanying plan set.

All upland flows tributary to Short Sands beach will be concentrated at one location at the north end of the beach, except some flow from Cape Neddick. A schematic diagram of the proposed trunk drain is shown on Figure 11. The trunk drain system required at Short Sands is not quite as extensive as that the Long Sands locations. However, it may be more disruptive to traffic and existing businesses during construction. More detailed plans and profiles of the consolidation drain at Short Sand are shown on Plan 6 of the accompanying plan set.

It must be noted that the capacities in the trunk drains will be significantly influenced by tide levels. If tide levels are high enough to flood the pipe, carrying capacity will be reduced as a standing water head must be established to push water though the outfall. The full effectiveness of the trunk drain system will only be realized if a pumped discharge system is installed to allow basically open flow conditions for the trunk drains. The pumped versus gravity outfall is discussed in the following section.

6.3.1.4 Outfall Structures

The trunk drain systems described above consolidates the upland flows at three locations at Long Sands and one location at Short Sands. Watersheds M, N and O are concentrated at the major outlet of Outfall O. Watersheds J, K and L are concentrated at the outlet of watershed K. Flows at the north end of Long Sands is concentrated at Outfall J. The Short Sands flow is concentrated at Outfall G.

With the flows thus concentrated, the problem is to transfer the flow to the ocean in a manner that will prevent flooding of the low areas behind the beaches. Flooding of some areas behind the dunes will occur unless pumping is provided. The question of how often will extreme

high tides coincide with peak upland flow delivery to the outfalls can not be predicted with any degree of accuracy. Upon completion of the new outfalls, all old existing outfalls should be blocked to prevent seawater from backing inland.

If the Town desired to assure that areas behind the dunes will be fully protected from flooding, it will be necessary to install large discharge pumps to pass the upland flows to the ocean. This was recommended in the 1970's study. Such a system would provide optimum protection, but would be complex and somewhat more costly.

As the frequency of need for a pumped system is uncertain and the costs would be rather high, a concept has been developed that would utilize gravity outfalls initially with the design orientated such that pump units could be added in the future if flooding frequency becomes unacceptable. This phased option would require installation of larger outfall pipes initially, but would allow phased construction and assembly of more data before committing to a pumped system.

The outfall systems will require major structures in difficult construction conditions. The proposed outfall system would consist of a headworks chamber where the incoming pipe would distribute flow to multiple outfall pipes, usually three. The outfall pipes would carry flow to the ocean. At the discharge point another major terminal structure would be desirable. The ocean discharge systems must consider the rate of upland flow and tidal conditions. For this study Edwards and Kelcey has considered both a gravity flow outfall system and a pumped outfall system.

A gravity discharge system will always be subject to tidal surcharge. If a high tide/storm surge elevation should reach elevation 10.5, the water would stand at this elevation behind the dunes, even if no upland flow was present. This condition alone could cause street and yard flooding in several areas. In addition it is necessary to create a backwater head on the outfall pipes and trunk drains to push the upland flow though to the ocean. The backwater head required will depend on the rate of inflow and the size of pipe selected.

Critical conditions occur with a peak runoff for the selected storm frequency occurs simultaneously with an abnormal high tide. If a 1-foot hydraulic backwater is allowed, the water elevation behind the dunes could reach elevation 11.5 to 12. This elevation would flood significant areas behind the dunes. Thus it is desirable to minimize the required backwater head to the lowest amount possible. This will dictate large outfall pipes. The flood zones of elevation 10 and elevation 12 are illustrated on Plans 7, 8, 9 and 10. Hydraulic analysis shows that with reliance on a gravity outfall system there will be occasional flooding up to elevation 12 feet.

The gravity outfall system will significantly reduce flood potential from rainfall/runoff events that occur at normal tide levels. The flooding that occurred in May 2006 was typical of such an event where runoff occurred at normal tides. Once the new outfalls are installed, all existing outfall outlets to the ocean must be blocked.

Schematic design plans of the headworks structure is shown in Figure 12 in Appendix A. Two illustrative cross sections are shown on Figure 13. The initial flow distribution structure is shown in solid lines. If at some time in the future discharge pumps need to be installed for enhanced flood protection, they would be mounted in new structure additions, one on either side of the primary distribution chamber. If pumps were to be installed, an entry trash rack would be required to protect the pumps.

For proper operation of the pump station a series of automated sluice gates would be required to bring the pumps on and off line as hydraulic conditions vary. The pumps would not operate frequently or for long periods of time. The power requirements for such pumps will be significant, perhaps up to 1600HP at some units. Actual power consumption will not be great, but the demand charges will be significant. The question of standby power at each location must be considered as the critical conditions are likely to occur during a severe storm event. The discharge pumps could be large vertical propeller pumps, or Archimedes screw pumps. A schematic diagram of a typical screw pump installation is shown on Figure 14. Power requirements would be similar for each type of pump. Screw pumps would require a larger footprint and would be more intrusive.

The configuration of the outfall systems at each major outfall location will be similar. The number and size of outfall pipes may change for a specific location with accompanying structure dimension changes. All locations will require construction well below high tide.

It is unlikely such line power along the beaches is currently available. Final design should consider providing local power generation at each station in lieu of line power plus standby power.

The outflows and tentative pipe sizing are shown in Table 2. As noted previously, the sizing is based on the following conditions:

Table No. 2
Summary of Outfall Conditions

Item	***Outfall***			
	O	**K**	**I**	**G**
Est. 25-Year Outflow (CFS)`	305	314	50	270
Est. 50-Year Outflow (CFS)	350	352	56	320
Est. 100-Year Outflow (CFS)	580	434	70	415
Number of Outfall Pipes	3	3	2	3
Pipe Size	66”	66”	36”	66”
Number of Pumps	6	6	3	6
Pump Capacity (Total) (CFS)	400	360	60	380
Approximate Horse Power (Total)	1600	1500	1000	1600

Gravity Outfall Systems
Design flow 50+ year storm
Design tide level 10.5 feet

Pumped Outfall
Design flow 50+ year storm
Design tide elevation 11 feet

The pipe sizings in the table are approximate for these basic design criteria. Adjustments may be made during final design.

To better ascertain when, or if pumped discharge systems may be required, it is proposed to install instrumentation to measure and record actual conditions at each outfall.

The following data should be recorded:

- Rainfall – 2 locations
- Flow rates – Each outfall structure
- Backwater elevations
- Tide levels
- Detention area elevations

This data will give the Town a sound database on which to consider future program elements.

6.3.1.5 Terminal Structures

The terminal structure is shown in schematic design on Figure 15 in Appendix A. Again the actual size will vary with outfall locations. An extensive terminal structure is desirable to protect the pipes from the heavy waves that occur along the beach during northeast storms. Without such a structure the pipe is more vulnerable to wave action and debris could be washed back into the pipes. This deposit of debris in outfall pipes has been a major maintenance problem on existing outfalls. Locating multiple outlets on the sides of the structure will lessen the debris entry problem and will lessen potential beach erosion at the outfall location. Outfalls of this magnitude can also be attractive nuisances with people curious about them. All outlets to the structure must be barred to prevent children from entering the pipes. Heavy riprap will be added around the structure for its further protection from wave action.

However, the terminal structure illustrated is quite expensive. An option would be to replace the terminal structure with heavy rip rap protection. Costs have been developed for both options. The initial program could use the rip rap approach with formal terminal structures installed at a later date in conditions warrant.

6.3.2 Summary Statement of Structural Improvements

The following is a summary of all recommended structural flow mitigation facilities:

- Culvert Upgrades: Table 3 following this page lists all culverts where upgrades may be required. Those line items shaded will be scheduled for early upgrade. The remaining units would be accomplished over time, as need and funding permit. NOTE: See Appendix C for full inventory of culverts.

- Upgrade drain system – Airport Drive Extension, Cape Neddick
  - New drain system
  - New inlets
  - New outfall

- Upgrade Barrell Lane outfall
  - New inlet structure
  - New outfall

- Replace/enlarge culverts on York Street
  - Culvert at Private Drive
  - Culvert at Outfall P - York Street
  - New outfall

- Enlarge Route 1 culvert near Turnpike Extension

- Provide supplemental upland detention upstream of Route 1 culvert
  - Control orifice-weir
  - Access drive

- Consolidate flows at beaches to four locations:
  - Outfall O, Outfall K, Outfall I and Outfall G
    See Plans 3, 4, 5, & 6, Volume 2

- Install Enlarged Ocean Outfalls at Outfall O, K, I & G
  - Headworks structure – gravity outlet
  - Multiple outfall pipes
  - Terminal structure (optional)
    Figures 6, 7 & 8; See Table 2 for sizing

- Install instrumentation at outfall locations
  - Record flows
  - Record backwater elevation
  - Record tide levels

- Install instrumentation at key culvert inlet control structures
    - Record flows
    - Record backwater elevation

- Install 2 rain gauges in watersheds
    - Record precipitation

- Based on demonstrated need, install outfall pumps at outfall locations with automated control gates. See Figures 8, 9 and 10.

7. COST PROJECTIONS

7.1 NON STRUCTURAL ACTIONS

The non-structural elements of the program defined in Section 6.2.2 are largely administrative in nature. To take the wetlands into the Town's conservation area to the levels defined herein will require significant preparatory work, including:

- Formal wetland survey to define limits
- Survey to identify 100-foot setback and 2-foot elevation line
- Definition of property ownership
- Legal work as necessary to secure easements

To secure rights-of-way along major water courses will also require preparatory work:

- Definition of property ownership
- Determination of rights-of-way widths
- Legal work as required to secure rights-of-way

As there is a very significant amount of wetland areas and watercourses, the preparatory delineation and survey costs will be significant. The legal effort will also be significant. As most of the land to be placed under conservation area or right-of-way is not buildable or suited for any other uses, the actual value of the property should be minimal.

While it is quite difficult at this stage of the program to set firm costs on the preparatory work for conservation area transfers and rights-of-way, we would suggest a general budget amount of $200,000.

7.2 STRUCTURAL ACTIONS

The structural actions consist of two significantly different levels of work and their associated costs. The more traditional elements of work would include culvert upgrades, local drain system improvements and installation of inlet control structures on those culverts that serve wetland where detention is utilized. This work is defined in Section 6.3.2 Culvert Upgrades. The anticipated capital costs for these elements of the program are summarized in Table 3. The costs presented include allowances for engineering, technical services and contingencies.

Table 4 Projected Costs - Upland Systems		
Project		***Est. Cost***
Culvert Upgrades with Control	$	567,000
Control Structures – Existing Culverts	$	97,000
Culvert Upgrades without Control	$	243,000
Subtotal Culverts	$	907,000
Cape Neddick Storm Drain System	$	420,000
Outfall P – York Street System Upgrade	$	150,000
Barrell Lane System Upgrade	$	280,000
Route 1 Culvert Enlargement (near Turnpike entrance)	$	75,000
Control Structure to Enhance Detention*	$	50,000
Subtotal Upland Work	$	975,000
TOTAL	**$**	**1,882,000**
* In lieu of enlarging Route 1 culvert		
NOTE: Cost estimates include 10% construction contingency and 25% for engineering and technical services. Land acquisition costs not included.		

The work at the beach outfalls is of a very different magnitude compared to the culvert upgrades. The outfall systems will require complex construction under very difficult physical conditions. Key construction constraints include:

- High ground water will dictate well pointing
- Construction below sea level will require sheet pile coffer dams and pumping
- Significant conflicts with existing utilities are to be expected.
- Construction will be disruptive to the neighborhoods.

Even where the non-structural elements of the work are completed, large peak runoff flows will arrive at the areas behind the dunes. The facilities required to concentrate and discharge these flows are described in Section 6.3.2. The general magnitude cost estimates of these work items are shown in Table 5.

Table 5
Beach Systems Cost Projections

Location		Base Costs	Add Pumps	Add Terminal Structure
Outfall O				
	Consolidation drains	$3,200,000		
	Headworks without pumps	$510,000	$4,000,000	
	Outfall pipes	$1,350,000		$1,200,000
	Subtotal Base Cost	$5,350,000		
	Subtotal Base + Pumps		$9,350,000	
	Subtotal Base + Pumps + Terminal			$10,550,000
Outfall K				
	Consolidation drains	$1,980,000		
	Headworks without pumps	$810,000	$4,000,000	
	Outfall pipes	$1,350,000		$1,200,000
	Subtotal Base Cost	$4,140,000		
	Subtotal Base + Pumps		$8,140,000	
	Subtotal Base + Pumps + Terminal			$9,340,000
Outfall I				
	Consolidation drains	$1,550,000		
	Headworks without pumps	$550,000	$3,000,000	
	Outfall pipes	$820,000		$750,000
	Subtotal Base Cost	$2,920,000		
	Subtotal Base + Pumps		$5,920,000	
	Subtotal Base + Pumps + Terminal			$6,670,000
Outfall G				
	Consolidation drains	$1,900,000		
	Headworks without pumps	$810,000	$4,000,000	
	Outfall pipes	$1,350,000		$1,200,000
	Subtotal Base Cost	$4,060,000		
	Subtotal Base + Pumps		$8,050,000	
	Subtotal Base + Pumps + Terminal			$9,250,000
Total Program		**$16,470,000**	**$31,460,000**	**$35,760,000**

NOTES: Costs include 10% construction contingency + 25% engineering & technical services.
Costs include allowance for watershed instrumentation.

7.3 OPERATION AND MAINTENANCE COSTS

All stormwater drainage systems require considerable maintenance efforts to keep the systems functioning as intended. Currently the Town has only a nominal amount allocated to maintenance of its drainage systems. With the culvert and control structure upgrades presented in the prior sections, we believe the Town should specifically dedicate $150,000 to $200,000 per year for general operation and maintenance of its drainage facilities.

When the major outfalls at the beach are installed, operation and maintenance requirements will increase. This is especially true if pumping at the outfall is installed. As these facilities will not be installed immediately, projecting operation and maintenance costs is not practical at this time.

8. PROGRAM FUNDING

8.1 GENERAL TAXATION

The total program described in this report will constitute by far the largest capital program ever considered by the Town. Financing this work in a manner that is within the capacity of the Town is a significant challenge.

Typically in the State of Maine the majority of local revenues are raised through the property tax. The largest proportion of these tax revenues is typically allocated to education. The high property taxes in the State are of great public concern, but limited efforts have been made in the legislature to control local tax levels.

While general taxation may support the recommended increase in public works funding for maintenance of the existing facilities, and perhaps accomplish a portion of the culvert upgrade work, it is very unrealistic to think that general taxation can support the larger program. Thus, other funding procedures must be considered.

8.2 CREATION OF A STORMWATER UTILITY

In recent years some Maine communities have considered creation of a stormwater utility to help defray the costs associated with stormwater management in designated sections of the community. While few such utilities currently exist in Maine, the study area in York would appear to be a good example of where such a utility would be beneficial.

The detailed creation of a stormwater utility is beyond the scope of this report. However, a working paper prepared by Edwards and Kelcey outlining the key features of a stormwater utility is attached to this report as Appendix B.

On a general overview of the defined study area, it may be realistic to raise a few hundred thousand dollars per year through such a utility, depending on actual user rates established. While revenue raised through a stormwater utility, combined with general taxation, may allow completion of the culvert and local area upgrades, it will not raise significant funds to support the major work at the beaches. It is estimated that creation of such a utility would require roughly $100,000.

8.3 IMPACT FEES

Some communities have established impact fees where all new development must contribute to a fund specifically earmarked to a Town need that will be exacerbated by that development. It does not appear that creation of an impact fee for stormwater management would be beneficial.

The ordinances and regulations suggested in the non-structural action section of this report would require that all significant new development in all watersheds must develop and

implement its own stormwater management plan that is fully coordinated with the Master Stormwater Management Plan. The recommended ordinances would also require that the owner establish a firm financing mechanism to operate and maintain their system over the long term.

Thus, unless a fee were to be charged to all properties in the watershed, it does not appear reasonable to apply it to only new development. The revenue raising would be better accomplished through a stormwater utility.

8.4 TAX INCREMENT FINANCING (TIF)

In communities where large developments are proposed that require an immediate upgrade of supporting infrastructure, a Tax Increment Finance District is established where a portion of the proposed tax revenues generated by the development are specifically directed toward infrastructure upgrades.

While some development will occur within the study watersheds, it does not appear to be of the type or scale that would warrant establishment of a Tax Increment Finance District.

8.5 STATE AND FEDERAL GRANTS IN AID

The above discussions essentially cover the local revenue raising procedures allowable under Maine Law (local option taxes are not permitted). Thus, the Town must look for external assistance to undertake the majority of the program, especially in the beach areas.

State agencies which have grant and/or loan programs that may be of assistance to the Town include:

- Flood Mitigation Assistance Project Grants (MEMA) – Maine receives approximately $100,000 per year to re-grant as a lump sum implementation project.
- Pre-Disaster Mitigation Program (MEMA) – Maine receives approximately $250,000 per year to issue to towns that are part of the National Flood Insurance Program.
- Community Development Block Grants – A maximum of $400,000 per year is available to selected communities for infrastructure projects in low/moderate income areas only.
- State Revolving Loan Fund – This program provides low interest loans for selected projects on a revolving basis as state funding allows.

Selected Federal agencies may have programs of assistance that may be applicable to the Town. Although these grants are highly competitive nationally, they are listed below:

- Watershed Protection and Flood Prevention (USDA) - USDA offers grants to provide technical and financial assistance to improve flood prevention watershed

protection projects in watersheds smaller than 250,000 acres. The average grant award is $650,000.

- North American Wetland Conservation (US Fish and Wildlife) – Project implementation grants are available to assist in land acquisition or wetland restoration in areas where bird habitat can be preserved. Cooperation with Audubon Society or Wells Reserve would be recommended prior to application for this grant. However, funding from $50,000 to $1,000,000 could be requested.

- Cooperating Technical Partners (HUD and NFIP) Funding is available to keep flood hazard maps up to date by the community. Funding amounts have ranged from $35,000 to $6,000,000.

Additional information on these grants is contained in Appendix D.

While stormwater conditions in the Town of York would seem to justify some funding under normal state and federal aid programs, the availability of funding is limited and demand for it is great. The Town should attempt to secure any funds which may be available through normal agency channels. It is quite unlikely that the major funding required for resolution of the flooding problems at the beaches will be available.

8.6 SPECIAL FEDERAL FUNDING

The cost requirements for mitigating the serious flooding at the beaches in York are well beyond the capacity of the Town to support, even with normal levels of governmental aid. To accomplish the work in any reasonable timeframe, it would appear that special, specific federal funds must be made available. This is usually accomplished by the Congressional delegation through the "earmark" procedure where specific projects are attached to legislation. This "earmark" process has received significant criticism in recent months when several marginally valid projects were funded. However, this is similar to the way Senator Mitchell secured funding for the new Brunswick Topsham bridge. Special Demonstration Project Grants are sometimes made available also.

Funding through such procedures is obviously a political process that may be complex. However, with the severe flooding problems the Town has experienced, it would seem well advised to have detailed talks with the Congressional delegation to explore special funding for the projects at the beach.

9. ENVIRONMENTAL PERMITTING

The overall program has been reviewed to estimate the potential permitting requirement that will have to be met prior to any construction. One meeting has been held with the staff of the State of Maine Department of Environmental Protection.

Initial discussion with the DEP staff highlighted several factors.

1. The areas along Long Sands beach and Short Sands beach have been designated as "dune areas" by the Maine Geological Survey. Agency maps follow this page.

2. The DEP generally does not approve of clearing or otherwise enhancing any watercourse to increase its flow carrying capacity. Essentially it must be left in its natural state.

3. The DEP generally does not encourage creation of detention basins in wetland areas.

4. The DEP does not permit seawalls or other construction along beach or dune areas.

5. The DEP encourages local government to obtain some type of public control over wetlands to assure their long term protection.

During discussion with the DEP staff, it was noted that the parking area on the dune system at Short Sands was at elevation of 11 to 12 feet, and due to the orientation to the northeast, it was subject to significant wave action that causes seawater to wash over the lot and into the streets. It was stated that the installation of seawalls or other barriers in such situations would not be permitted. It was noted that if such wash-over continued to be a major problem, the state might consider allowing the Town to raise the entire parking lot a few feet by placement of added sand. However, unless some form of protection was placed on the face of the newly applied sand, its stability would be in question. It might be possible to place some type of temporary barrier system in the parking lot over the critical winter months. This should be explored further by the Town.

The fact that all areas adjacent to the beaches are designated as dune (even though much of it is already built upon) will require permitting of any outfall system that will cross the designated dunes. As the outfalls will extend seawalls below mean tide level, it will probably be necessary to secure permits from the Army Corp of Engineers. Installation of the trunk drains and some of the outfall structures will encroach into areas formally designated as wetlands. These facilities will require wetland permits from the state, although the disturbed areas will be minimal. While permitting will be required in several areas, there are really no options that would avoid all impacts. It would appear

that the benefits of flood control would outweigh potential environmental impacts and permitting would be possible.

It is noted that many of the wetland areas behind road culverts serve as de facto detention areas and have done so for many years. In these areas it is assumed that use of this beneficial detention can continue without additional permitting. Without such continued use, the flow at the beach would be much higher than now exists.

In some locations, enhancement of temporary storage in wetland areas would appear practical and beneficial. The actual rise in water level above that which currently exists would be minimal. This would require installation of formal outlet controls at key locations. Such installations, if allowed by the DEP, would require permitting. Considering wetland areas west of the Turnpike would be typical of this condition.

Typical of all major construction projects it will be necessary to obtain permits from multiple state and federal agencies. However, it would appear that permits can be obtained to implement the programs described here in without major problems. The cost of permitting is included in the general magnitude cost estimate presented herein.

10. SCHEDULING

Some elements of the program can be reasonably scheduled at this time while other elements are dependent on special funding, the timing of which cannot be determined at this time.

It is important that the Town accomplish as much of the nonstructural elements of the program as soon as possible. Accomplishing this work will not greatly lessen flood flow, but it will prevent conditions from deteriorating further.

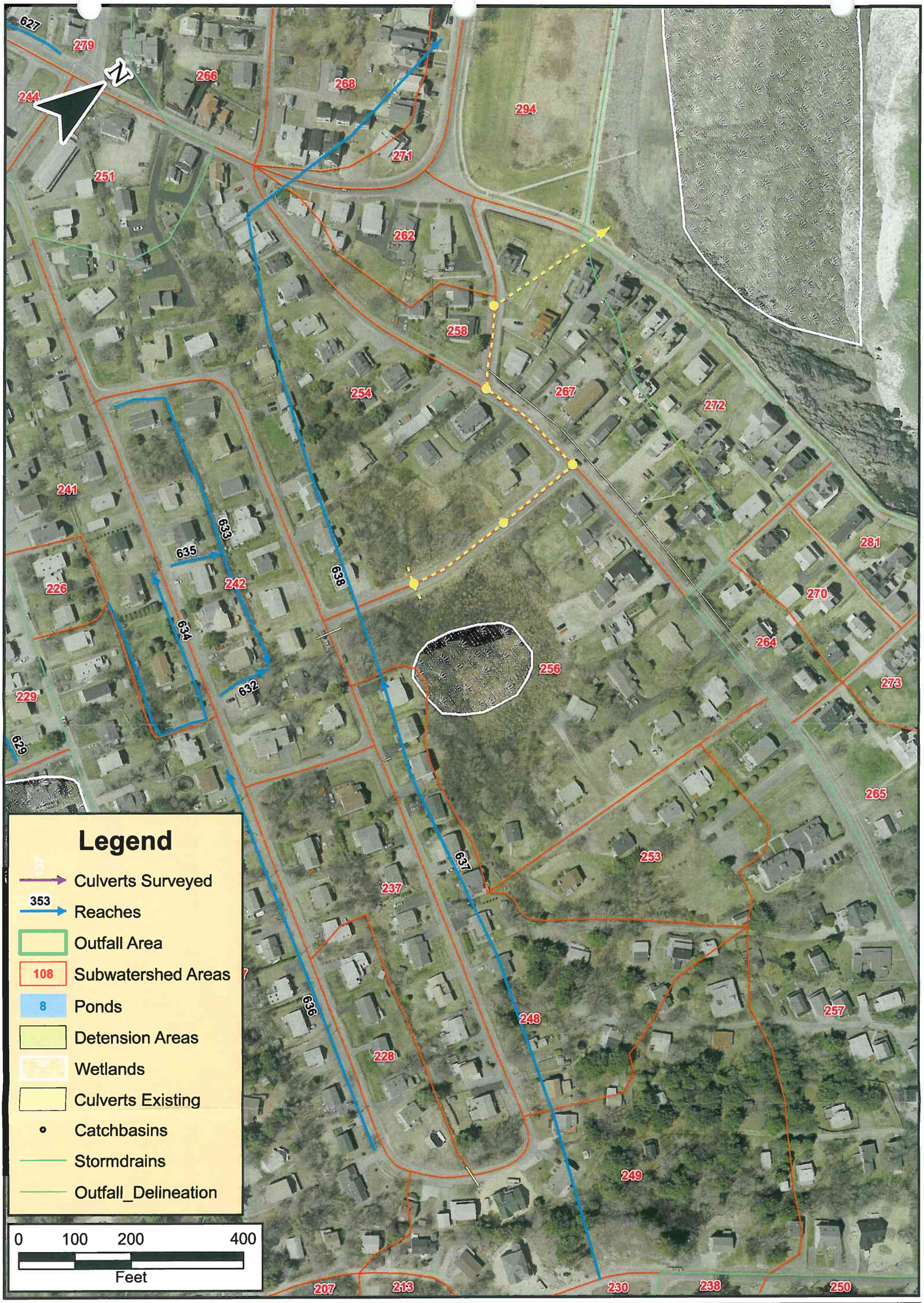
The following is a suggested tentative schedule for implementing the early phases of the program.

Tentative Implementation Schedule			
	Activity	**Begin**	**Est. Completion**
Wetland Preservation			
	Wetland delineation & survey	2006	2007
	Land ownership definition	2006	2006
	Establish limits of conservation area	2007	2007
	Prepare necessary legal documents	2007	2008
	Secure final conservation easements	2008	2009
Stream Right-of-Way Acquisition			
	Define watercourses to have right-of-way	2006	2006
	Land ownership definition	2006	2006
	Establish right-of-way widths & boundaries	2007	2007
	Prepare necessary legal documents	2007	2008
	Secure rights-of-way	2008	2009
Local area drainage upgrades			
	Cape Neddick – Airport Road	2007	2009
	York Street culverts	2007	2009
	Barrell Lane upgrade	2007	2009
	Route 1 culvert enlargement	2007	2009
	Detention control structure Route 1 area	2007	2009
Culvert Upgrades/control structures			
	Culvert upgrades with control structures	2007	2009
	Culvert upgrades without control structures	2007	2009
Create a stormwater utility		2006	2008

Major work at the beaches to be scheduled upon establishment of funding.

Appendix A

Figures 2 through 15



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CHECKED BY: SJB	PROJECT: 060057018

PROBLEM AREA #5
Outfall G

Data Sources:
Town of York
Maine Office of GIS

Edwards AND Kelcey
ENGINEERS
ARCHITECTS
PLANNERS
CONSTRUCTORS

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Portland, Maine 04102
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YORK WATERSHED MANAGEMENT
TOWN OF YORK, MAINE

Figure 2

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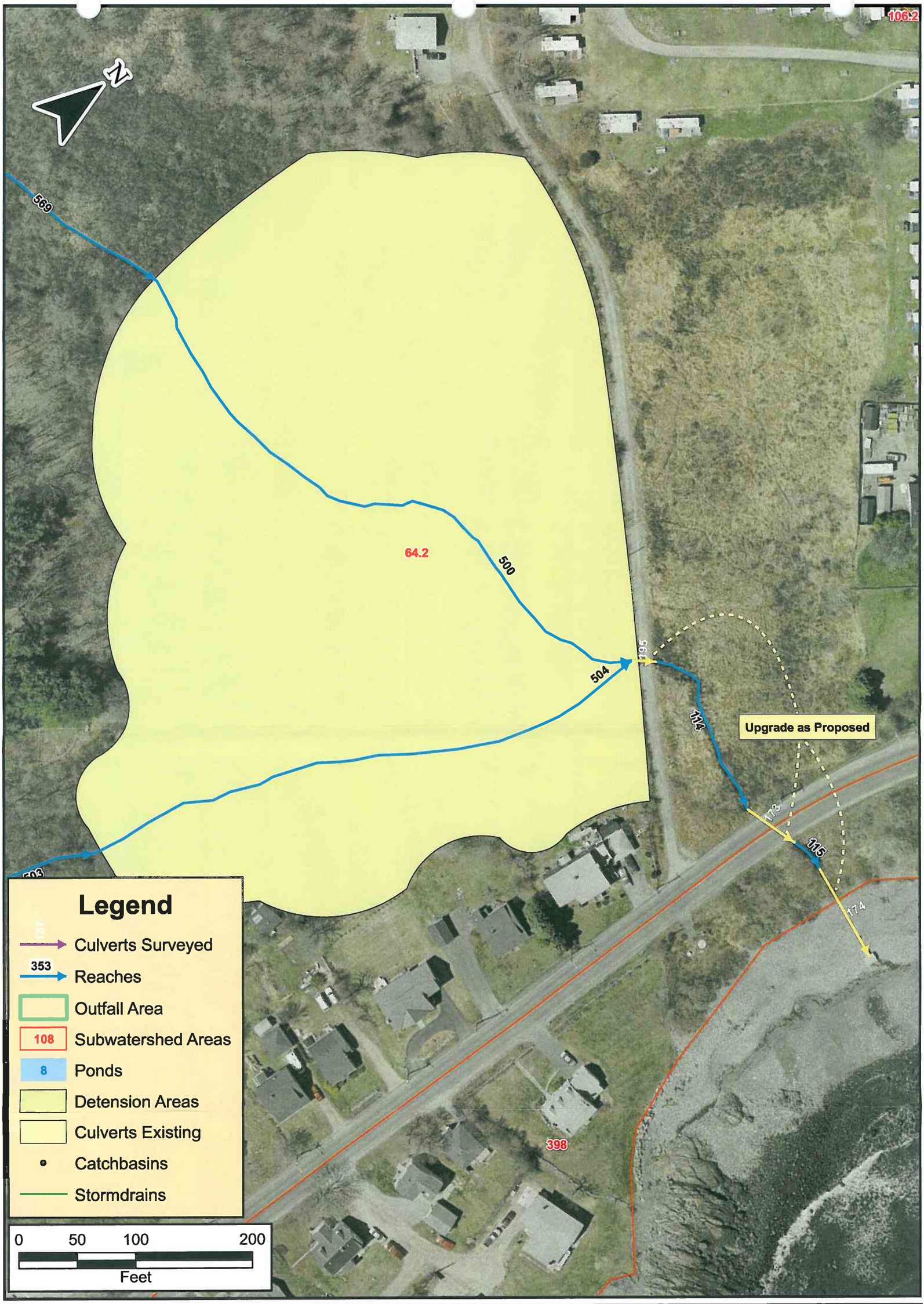

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PROBLEM AREA #4
Outfall P

Data Sources:
Town of York
Maine Office of GIS

YORK WATERSHED MANAGEMENT
TOWN OF YORK, MAINE

Figure 3

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PROBLEM AREA #1
Outfall R

Data Sources:
Town of York
Maine Office of GIS

YORK WATERSHED MANAGEMENT
TOWN OF YORK, MAINE

Figure 4

T:\Projects\938\Maps\Outfall_J_11x17.mxd

Legend

- Culverts Surveyed
- 353 Reaches
- Outfall Area
- 108 Subwatershed Areas
- 8 Ponds
- Detension Areas
- Culverts Existing
- Catchbasins
- Stormdrains

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PROBLEM AREA #3
Outfall Z

Data Sources:
Town of York
Maine Office of GIS

YORK WATERSHED MANAGEMENT
TOWN OF YORK, MAINE

Figure 5

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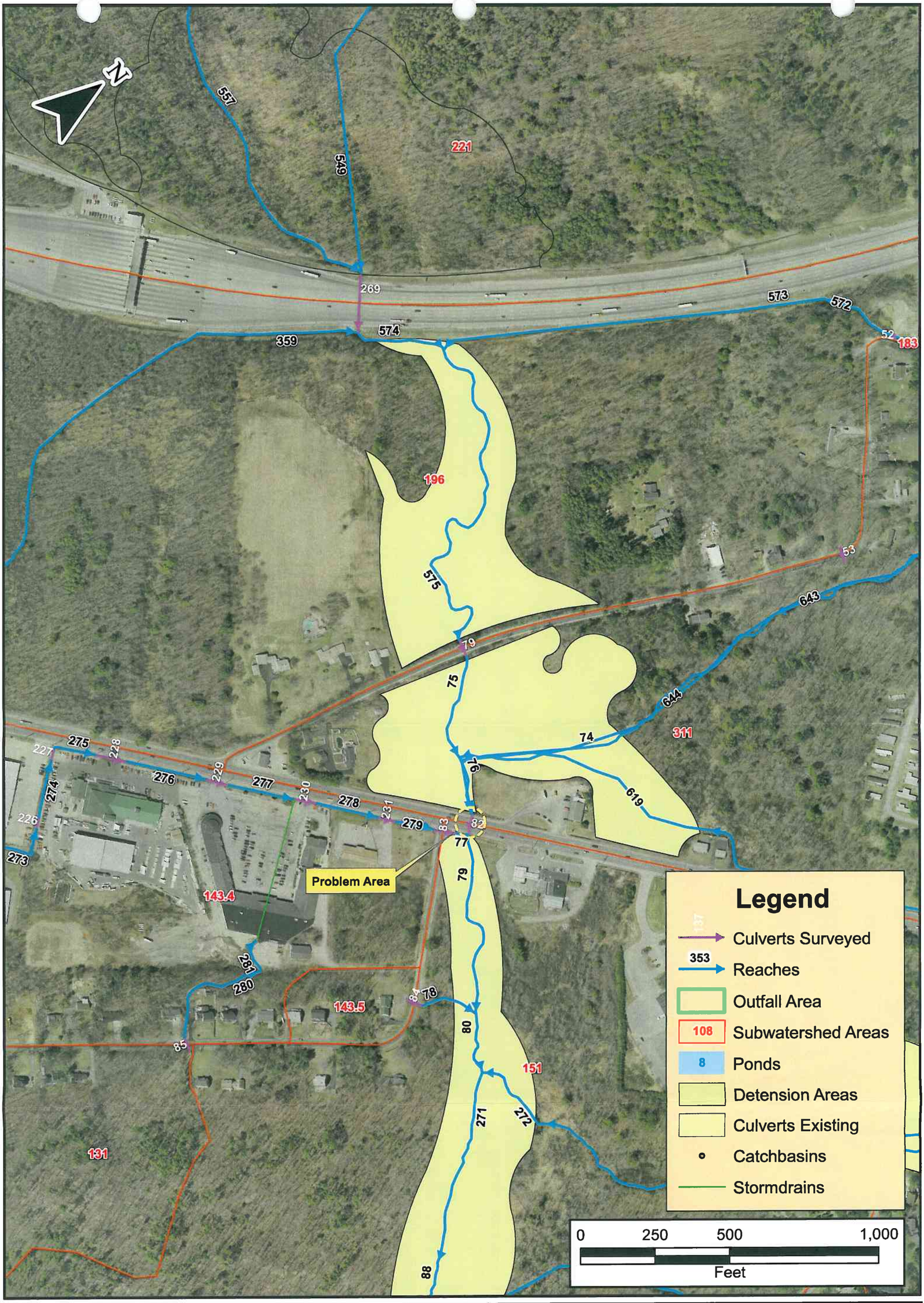

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PROBLEM AREA #2
Outfall O

Data Sources:
Town of York
Maine Office of GIS

YORK WATERSHED MANAGEMENT
TOWN OF YORK, MAINE

Figure 6

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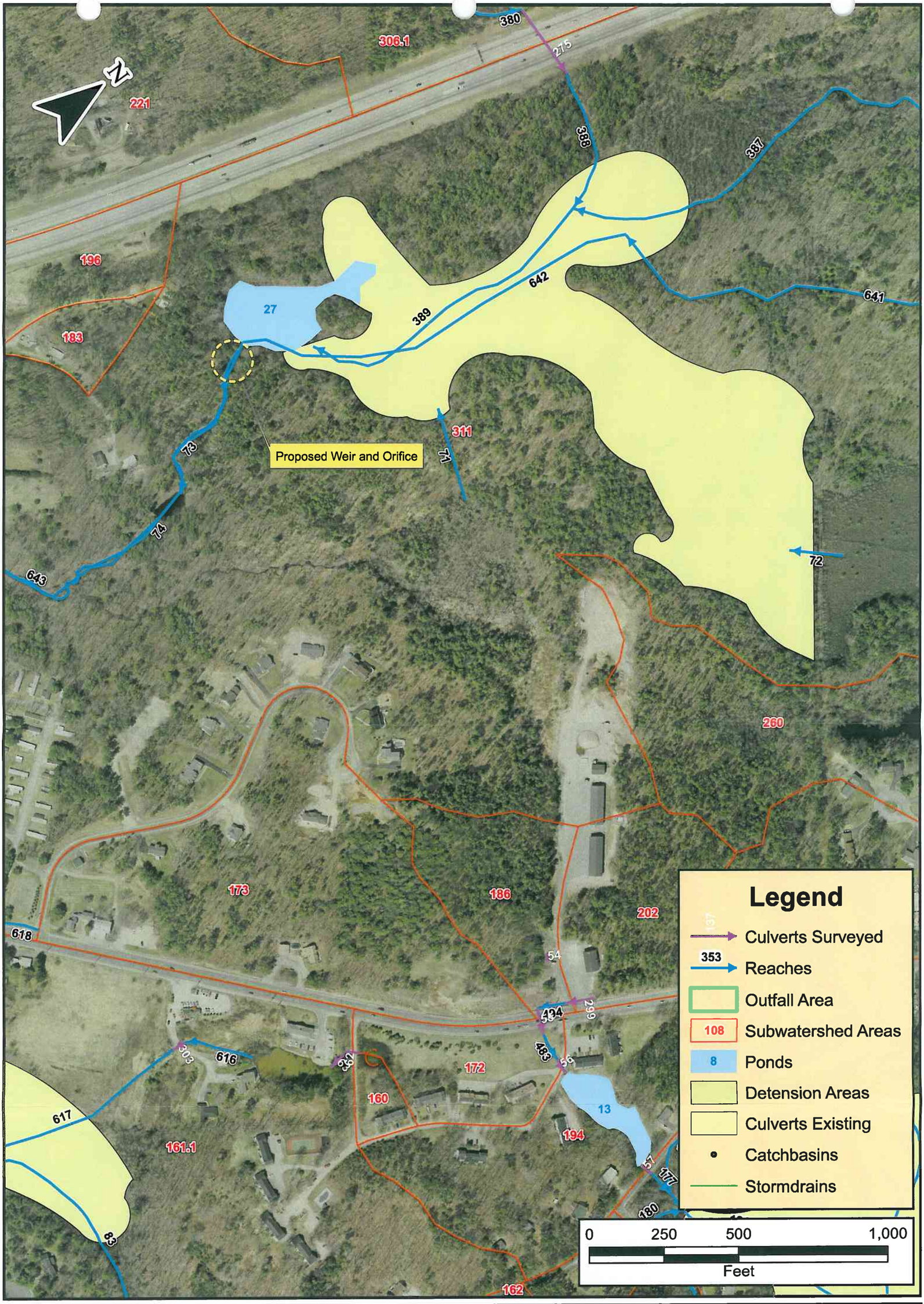

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CHECKED BY: **SJB**	PROJECT: **060057018**

PROBLEM AREA #2
Outfall O

Data Sources:
Town of York
Maine Office of GIS

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YORK WATERSHED MANAGEMENT
TOWN OF YORK, MAINE

Figure 7

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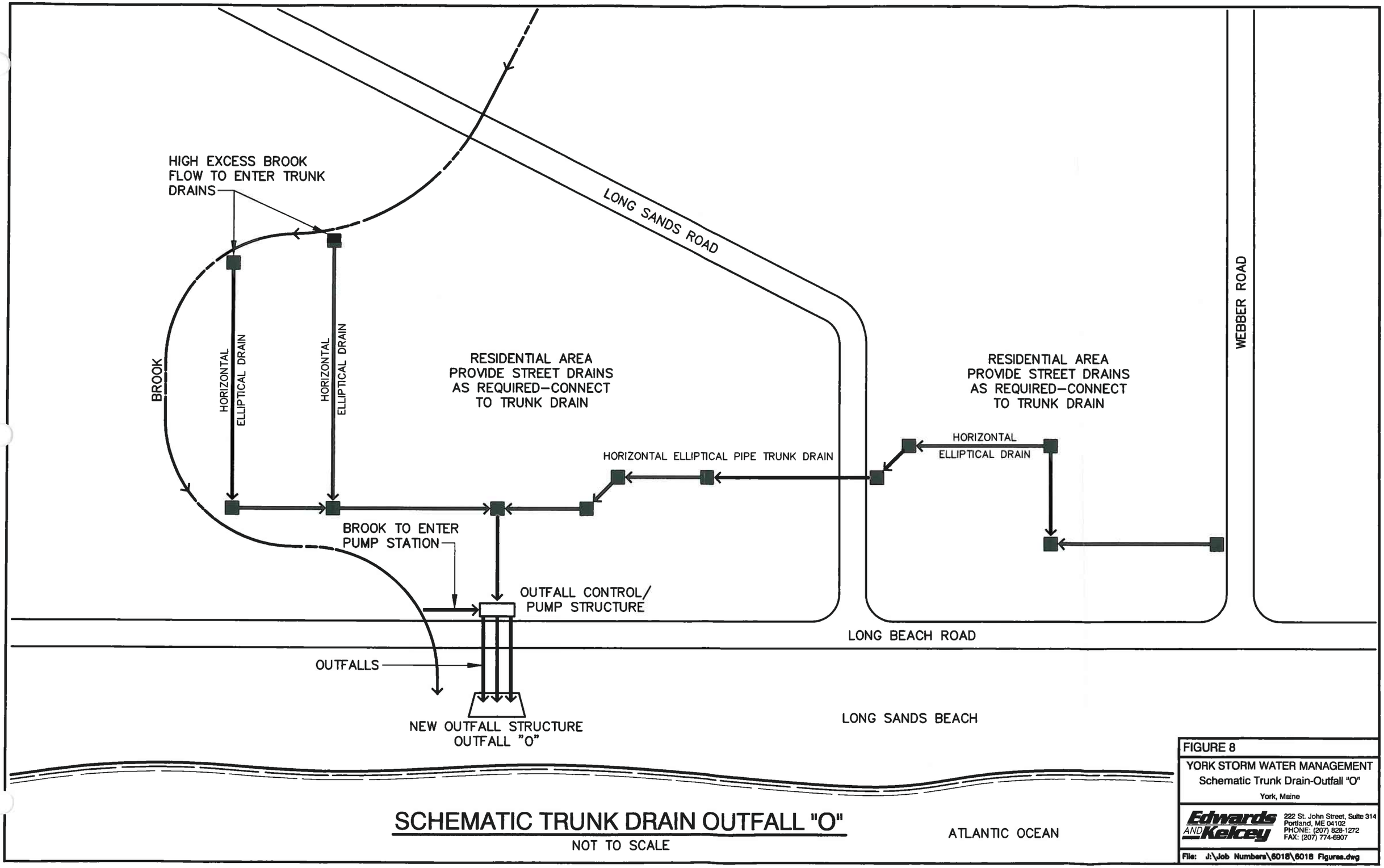

SCHEMATIC TRUNK DRAIN OUTFALL "O"

NOT TO SCALE

FIGURE 8

YORK STORM WATER MANAGEMENT
Schematic Trunk Drain-Outfall "O"
York, Maine

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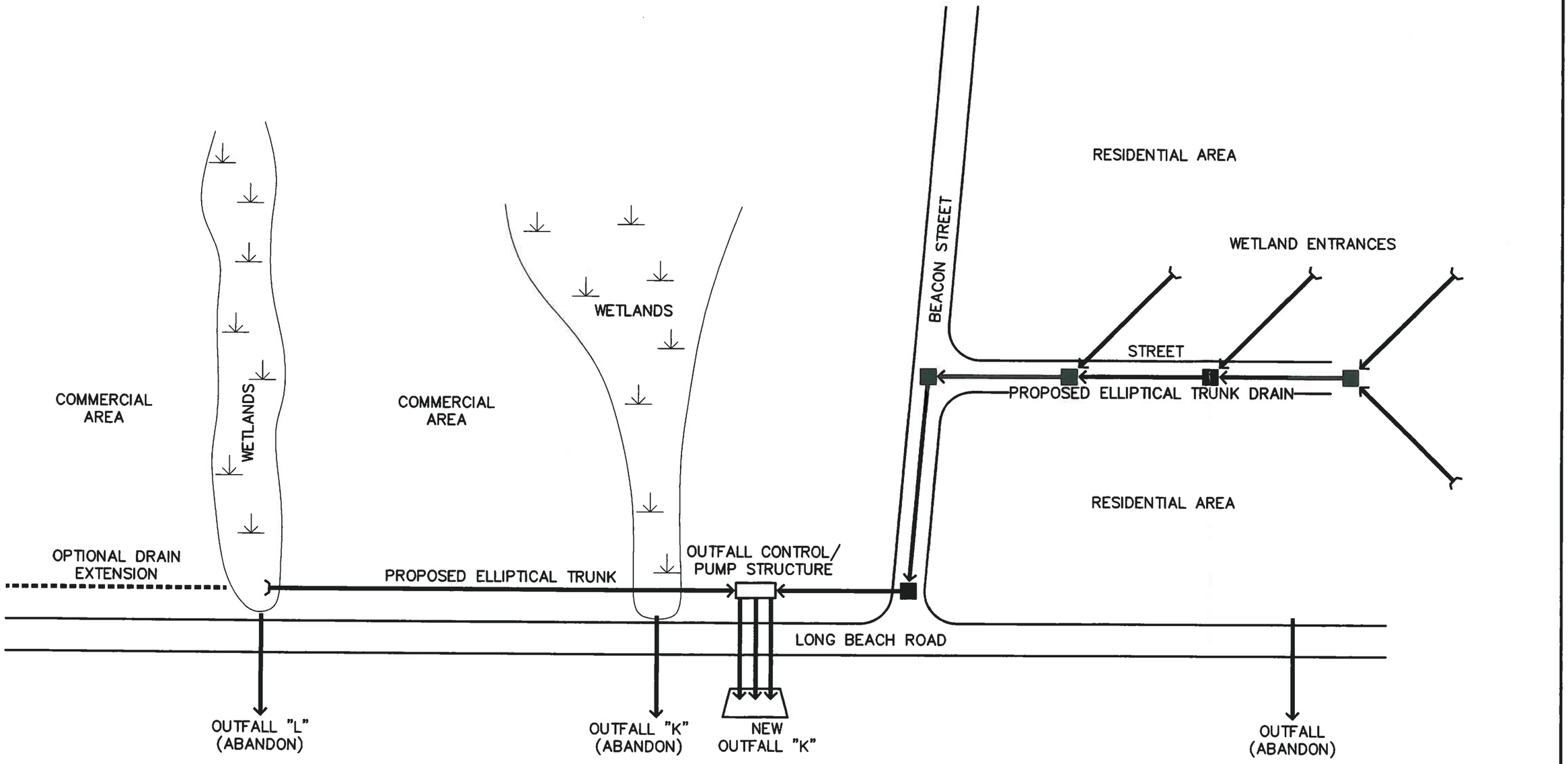

NOTE: LOCAL SHORE ROAD INLETS TO DISCHARGED DIRECTLY TO THE OCEAN.

SCHEMATIC TRUNK DRAIN OUTFALL "K"

NOT TO SCALE

FIGURE 9

YORK STORM WATER MANAGEMENT
Schematic Trunk Drain-Outfall "K"
York, Maine

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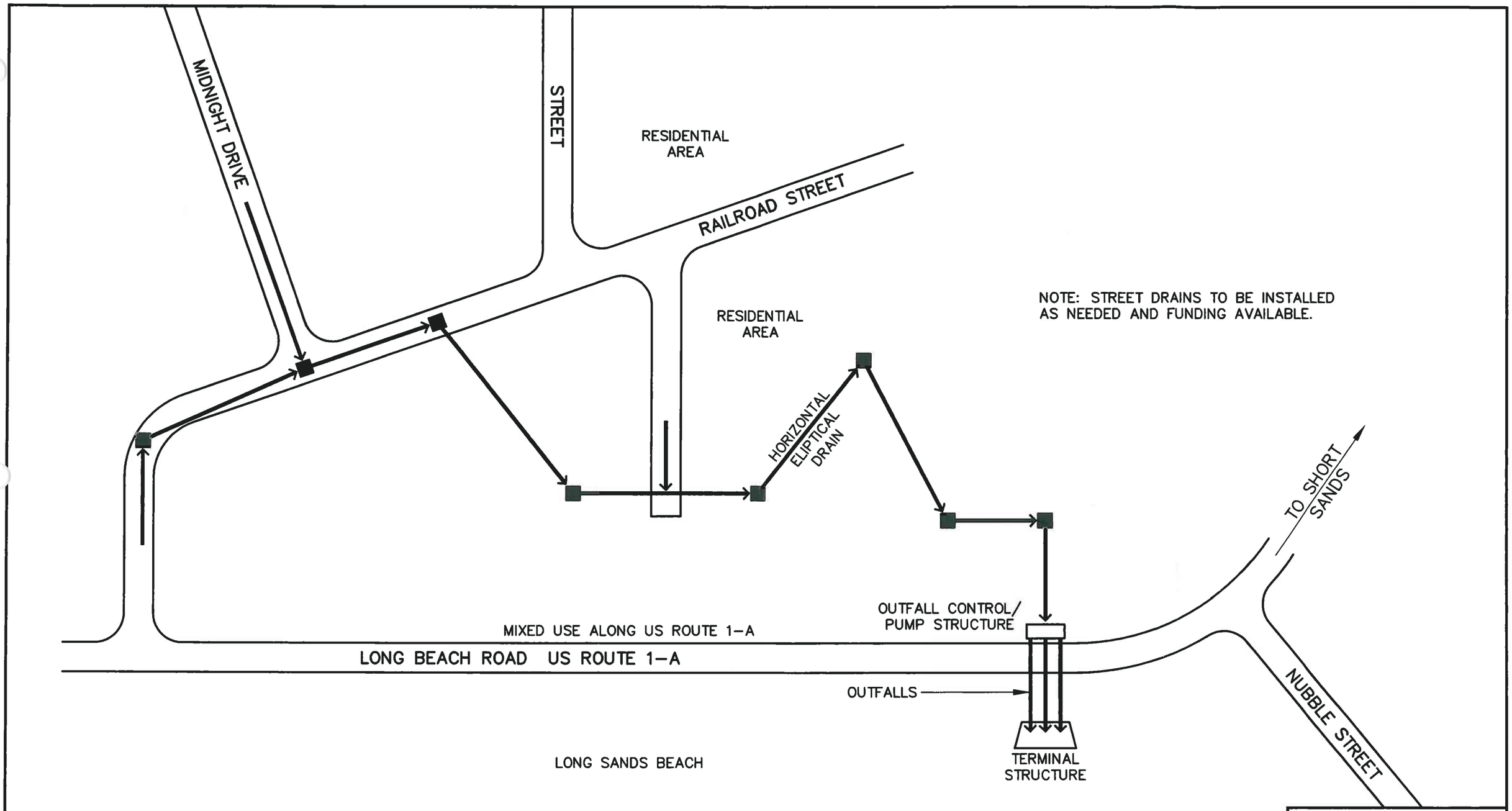

SCHEMATIC TRUNK DRAIN OUTFALL "I"

NOT TO SCALE

FIGURE 10

YORK STORM WATER MANAGEMENT
Schematic Trunk Drain-Outfall "J"
York, Maine

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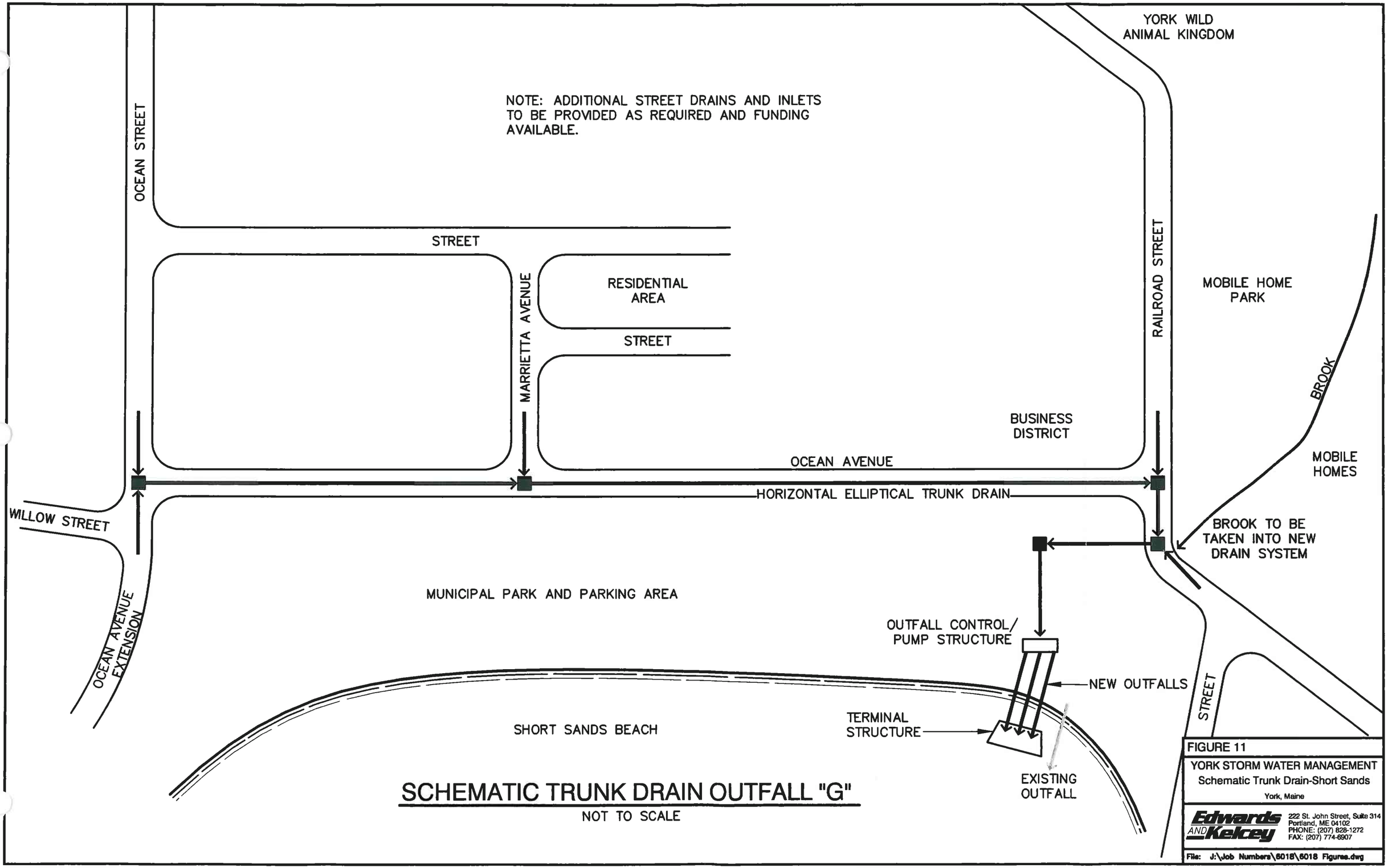

SCHEMATIC TRUNK DRAIN OUTFALL "G"

NOT TO SCALE

FIGURE 11

YORK STORM WATER MANAGEMENT
Schematic Trunk Drain-Short Sands
York, Maine

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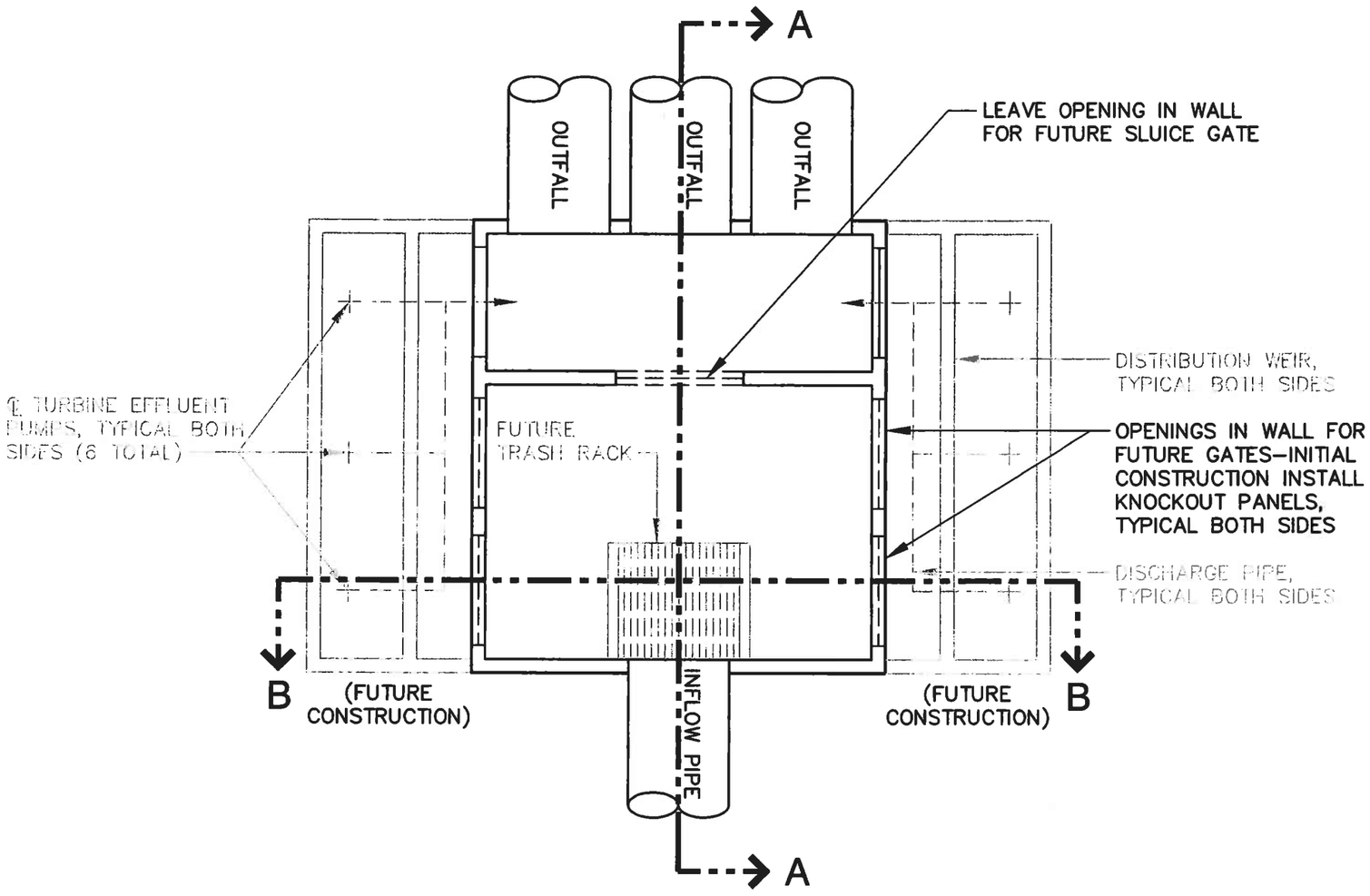

PLAN VIEW
OUTFALL CONTROL/PUMP STRUCTURE
(TURBINE PUMPS)

NOT TO SCALE

NOTES:

GENERAL

1. STRUCTURE CONFIGURATION TO BE SIMILAR AT EACH OUTFALL LOCATION. PIPE SIZING AND GENERAL DIMENSIONS TO BE SET FOR EACH UNIT.

INITIAL CONSTRUCTION AND OPERATION

1. CONSTRUCT CENTRAL CORE CHAMBER.
2. INSTALL (3) OUTFALL PIPES. UPSTREAM WATER ELEVATION CAN BE MAINTAINED BELOW 8.5 AS LONG AS TIDE LEVEL IS BELOW 7'–7.5'. HIGHER TIDES WILL SURCHARGE TO FLOOD LEVEL.

POTENTIAL FUTURE PHASE

1. CONSTRUCT SIDE PUMP CHAMBERS.
2. INSTALL TRASH RACK.
3. INSTALL AUTOMATED SLUICE GATES.
4. INSTALL (6) TURBINE PUMPS AND PIPING.
5. INSTALL GATE AND PUMP CONTROLS.
6. INSTALL CONTROL BUILDING ABOVE.

OPERATION

1. GATES STAY CLOSED AS LONG AS HEADWATER ON OUTFALLS IS ELEVATION 8 OR BELOW – GRAVITY DISCHARGE.
2. ABOVE ELEVATION 8 ONE SIDE OF PUMP SYSTEM GOES ON–LINE – CENTRAL GATE CLOSES, SIDE GATES OPEN AND PUMPS ON.
3. IF ONE BANK OF PUMPS CANNOT HOLD ELEVATION TO 8, SECOND BANK COME ON. AS WATER RECEDES PUMPS COME OFF AND GATES OPEN AND CLOSE TO INITIAL POSITION.

FIGURE 12

YORK STORM WATER MANAGEMENT
SCHEMATIC OUTFALL CONTROL/
PUMP STRUCTURE
York, Maine

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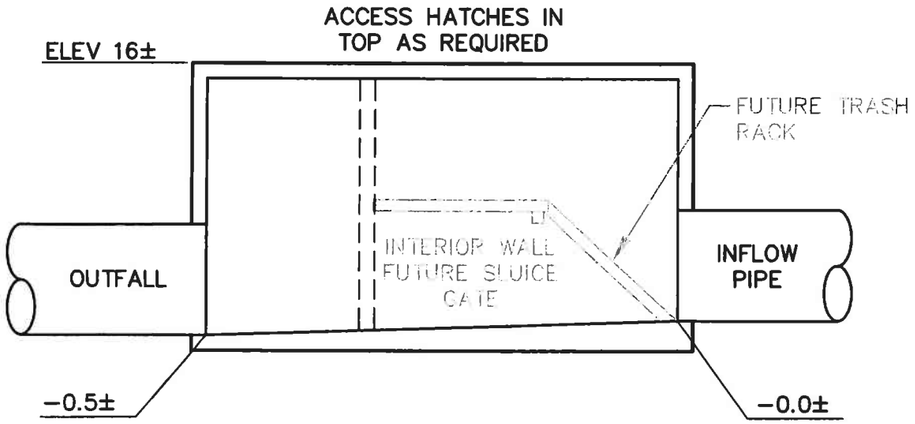
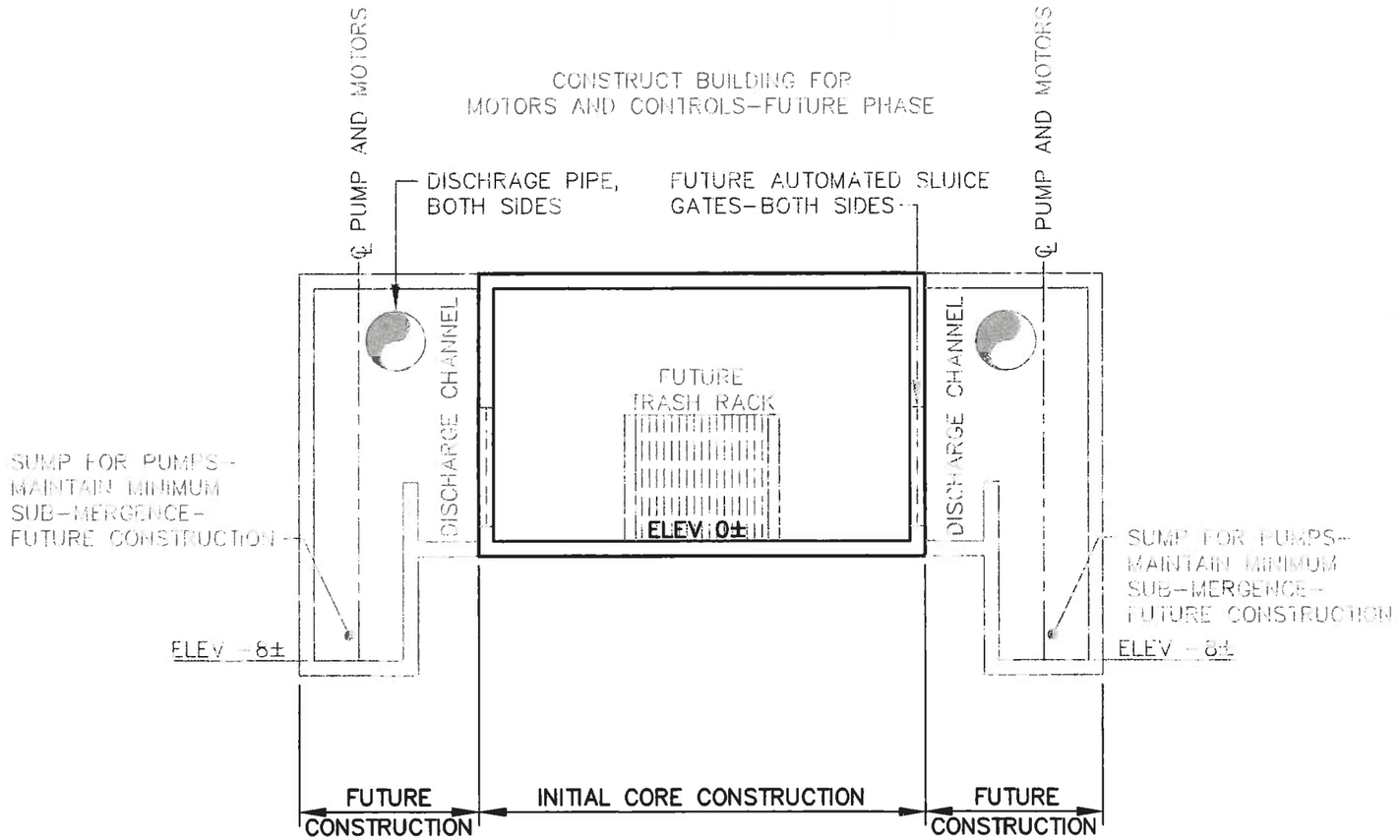


SECTION A-A
NOT TO SCALE



SECTION B-B
NOT TO SCALE

FIGURE 13

YORK STORM WATER MANAGEMENT SCHEMATIC OUTFALL CONTROL/ PUMP STRUCTURE SECTIONS
York, Maine

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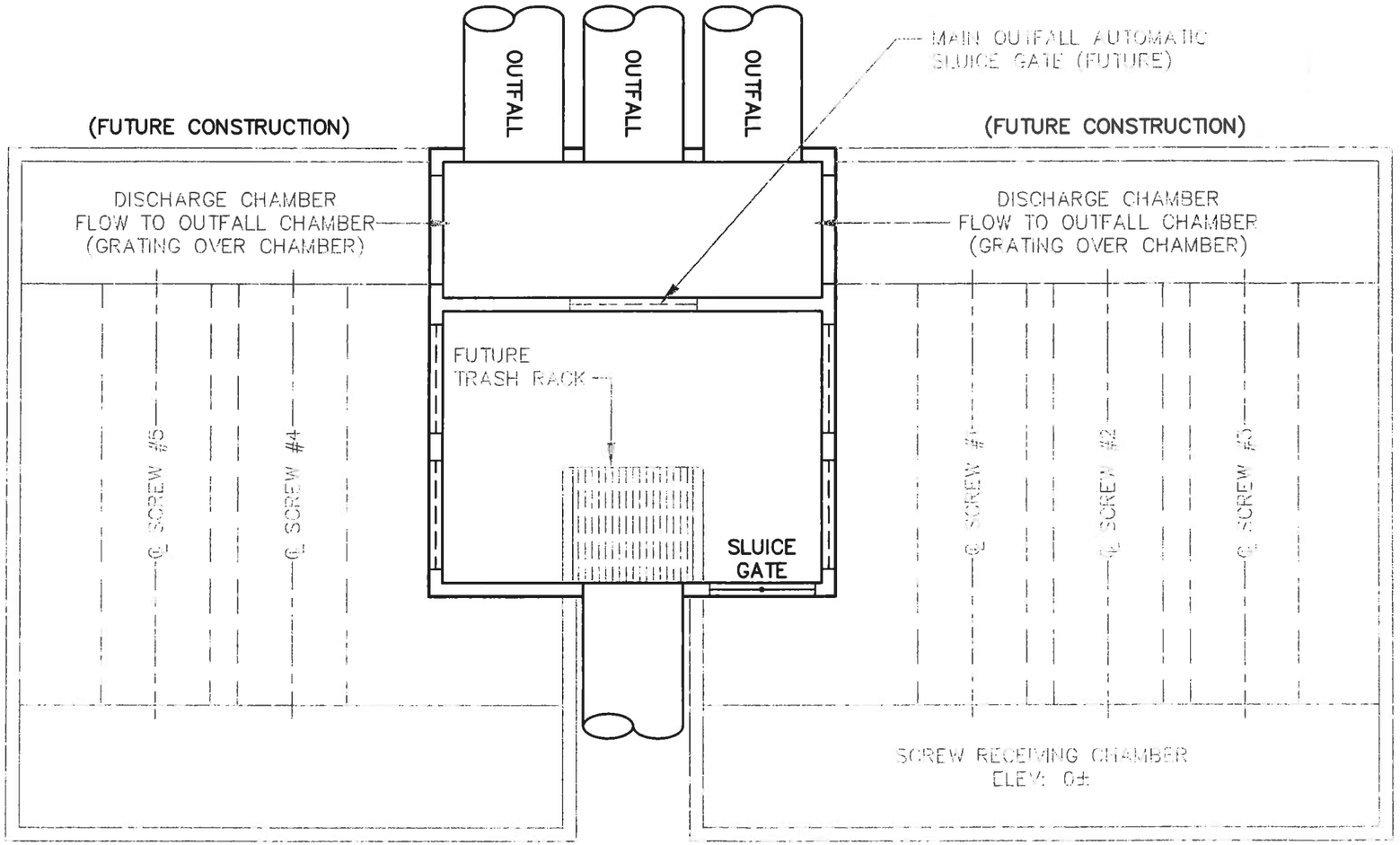
NOTE: SYSTEM OPERATIONS SIMILAR TO THAT DESCRIBED FOR SYSTEM WITH TURBINE PUMPS.



PLAN VIEW
OUTFALL CONTROL/PUMP STRUCTURE
(SCREW PUMPS)

NOT TO SCALE

FIGURE 14

YORK STORM WATER MANAGEMENT
SCHEMATIC OUTFALL CONTROL/
PUMP STRUCTURE
York, Maine

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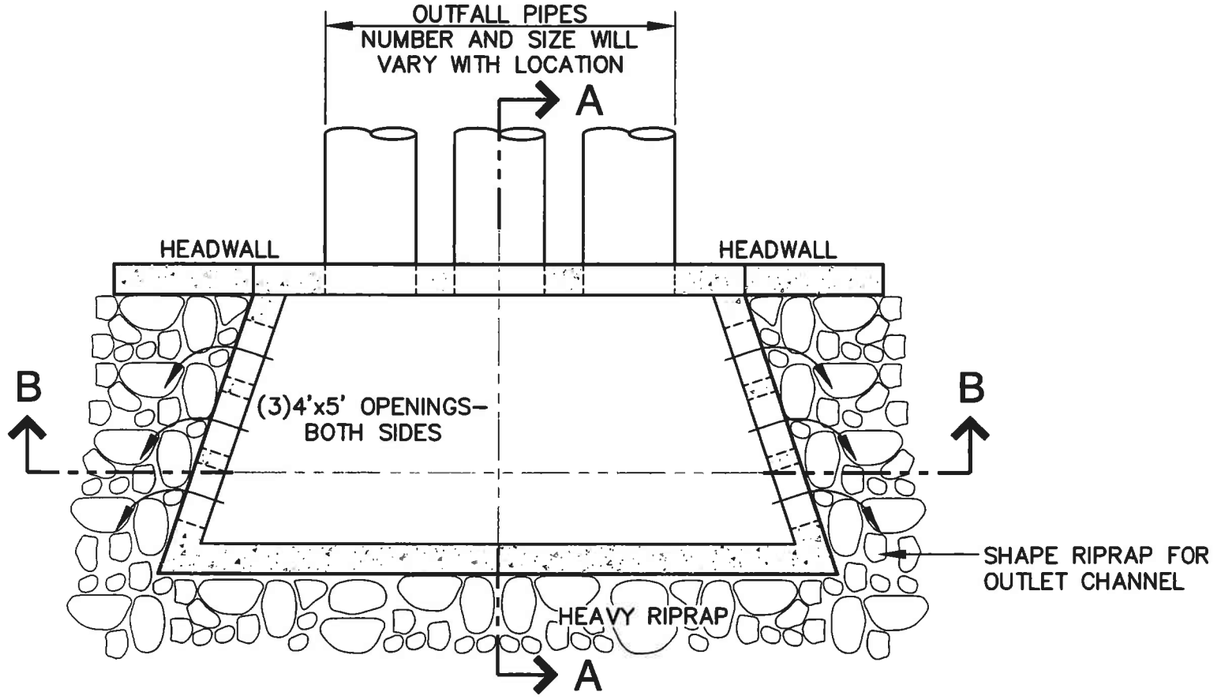
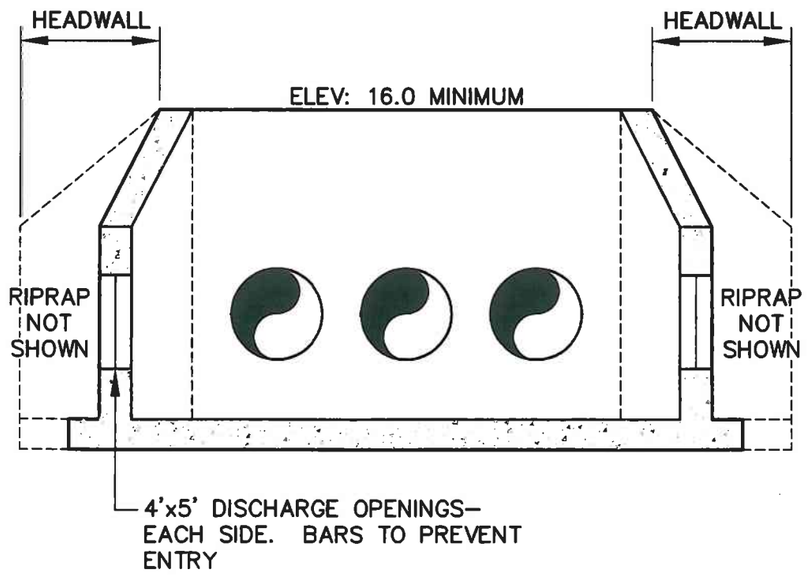


PLAN VIEW

NOT TO SCALE



SECTION B-B

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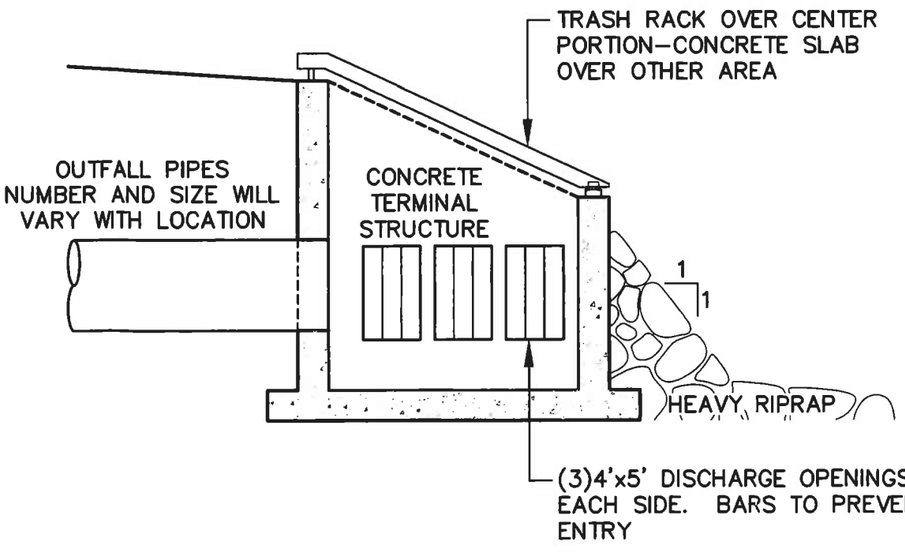

SECTION A-A

NOT TO SCALE

FIGURE 15

YORK STORM WATER MANAGEMENT
SCHEMATIC DESIGN-TYPICAL
OUTFALL TERMINUS STRUCTURE
York, Maine

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Appendix B

Discussion Paper – Stormwater Utility

MAINE COMMUNITIES
STORMWATER MANAGEMENT
THROUGH USER FEES

INTRODUCTION

All Maine municipalities must address the flooding potential and public health and environmental impacts of stormwater runoff from the community. Issues will include street flooding, basement flooding, watercourse erosion and degredation of water quality.

State and Federal regulations will dictate a somewhat more aggressive and structured approach to managing and mitigating these issues. This will undoubtedly require additional local funds.

Existing and Future Regulations that will affect Communities Stormwater Management Program

1. Post Construction Requirements (Chapter 500 Stormwater Phase II)
   New post-construction requirements to inspect structures at new development/redevelopment

2. Construction Inspections (Chapter 500 Stormwater Phase II)
   New requirements to report inspections at construction sites.

3. Urban Impaired Streams Requirements (Chapter 500/502)
   New requirements for urban impaired stream areas. These will apply to development of new sites with 3 acres impervious or 20 acres developed, or any redevelopment of any existing sites in impaired watersheds.

4. Master Planning (Stormwater Phase II/GASB 34)
   A. Develop and implement strategies that include a combination of structural/non-structural BMPs.
   B. Develop a program to evaluate, prioritize retrofitting, upgrading conveyance system. (Capital Improvement Program)

5. Illicit Discharge Inspections/Enforcement (Stormwater Phase II)
   A. Non Stormwater Discharge Ordinance
   B. Outfall Inspections

6. Future Regulations Likely to Set Schedule for Implementing System Retrofits and Upgrading

   The Community must prepare for implementing the required programs in the most operationally efficient and cost effective manner possible. This should include alternative institutional systems to implement the program.

INSTITUTIONAL OPTIONS

The questions to be resolved are how can the Community address the regulatory demands for stormwater management in the most operationally efficient and cost effective manner?

First, one must consider the institutional systems that may be best suited to achieving the desired results.

The institutional systems may include:

1. Status Quo – Community managed with institutional structure as it currently exists within established departments. Funding through normal tax rolls.
2. Create a stormwater "utility" format under local municipal government with shared personnel equipment, etc. Funding through user charges.
3. Create an independent quasi-municipal utility to serve the Communities stormwater needs. Funding through user charges. Legislative action may be required.
4. Expand functions of an existing Sewerage District to manage the stormwater utility. Funding through user charges.
5. Create an independent quasi-municipal intercommunity utility (if applicable) to multi-community stormwater systems. Funding through user charges. Legislative action may be required.

BENEFITS OF CREATING A "UTILITY"

1. The responsibility for long term stormwater management is consolidated into a single, identifiable entity which can be more accessible to the public and can respond to problems promptly.
2. The actual full costs of managing, operating and maintaining the stormwater infrastructure can be accurately accounted for.
3. The cost of stormwater management can be more equitably allocated to persons and property in relation to the benefits received.
4. The community will be more aware of the importance of stormwater management as its residents will see the cost directly.
5. The more formal institutional structure and cost accounting system may enhance the utilitie's ability to obtain future state and/or federal grants in aid.
6. Better able to comply with state and federal water quality regulations.
7. Properties of tax exempt organizations will be billed for stormwater services rendered whereas they are not on the general tax rolls.
8. Provides economic incentives for developers to adopt runoff mitigated elements in their development plans.

DISADVANTAGES OF CREATING A UTILITY

1. Stormwater management costs may be modestly increased.
2. There will be a significant one time cost to establish the "utility" and its cost recovery system.
3. The reallocation of costs will be unpopular with certain property categories most likely:
    - Tax exempt properties
    - Owners of relatively inexpensive building on large paved parcels (i.e., shopping centers)
    - Undeveloped land
4. It is a new concept in Maine which may have a certain public resistance (i.e., change is difficult)

UTILITY EVALUATION

The Community must evaluate the advantages and disadvantages of creating a stormwater utility to determine if such an institutional system would best meet its long term stormwater management needs.

The format of such a utility must also be determined, (i.e., local, inter-local, quasi-municipal, etc.). A utility serving multiple jurisdictions will require additional planning and evaluation and will be politically more difficult to establish. However, such a multi jurisdictional utility may offer long term cost advantage. Even if a local utility concept is adopted it may be cost effective to share certain tasks with other communities, such as billing, purchasing, etc.

To properly evaluate these issues the basic setup functions and management of a stormwater utility must be understood. The following pages present an overview of utility creation, function, and management.

FORMAT FOR A STORMWATER UTILITY

If a utility format is to be considered it will be necessary to create function and cost centers for utility operation with annual budgets established for each.

These cost centers are:

1. ***Utility Management***
   - General Administration
   - Clerical Support
   - Financial/Accounting/Billing
   - Public Awareness/Participation
   - Grant Administration
   - NPDES Compliance and Reporting

2. ***Planning & Engineering***
   - Surveying and Documentation of Existing Infrastructures
   - Program Planning & Development
   - GIS Development and Operations
   - Stormwater Master Planning
   - Water Quality Impact Evaluations
   - Water Quality Monitoring
   - Design of Capital Improvements
   - Construction Monitoring
   - Capital Expenditures Planning & Budgeting
   - Hazard Mitigation

3. ***Inspection & Enforcement***
   - Code Development & Adoption
   - Code Enforcement
   - Storm Drain System Standards & Regulations
   - Permit Administration
   - Water Quality Regulations
   - Erosion Control Regulations & Inspections
   - Inspection of Construction Activities

4. ***Operations & Maintenance***
   - Scheduling & Budgeting
   - Routine Maintenance – Clean Catch Basins, Storm Drains, etc.
   - Remedial Maintenance
   - Emergency Response Maintenance/Spill Responsibilities
   - Erosion and Sediment Control
   - Street Sweeping/Litter Control

5. ***Capital Expenditures***
   - System Expansion
   - Facility Upgrades/Major-Minor
   - Land/Row Acquisition
   - Strategic Basin Studies

The assigned costs to each center should include:

- Labor Cost, including Fringes & Overhead
- Office Space Requirements & Costs
- Utility Costs
- Equipment Costs – Amortization & Oper./Maint.
- Insurance
- Office Supplies
- Maintenance Supplies
- Professional Services/Legal-Engineering

FINANCIAL SUPPORT

To function as a utility the body must raise sufficient revenue to independently support its operations, including projected improvement programs.

Basis for raising revenue:

Premise: In general, utilities should gain revenue from those persons and properties that benefit from the services provided, approximately in relationship to the value of the benefits received.

For stormwater utilities the basic service provided is the efficient and environmentally sound disposal of surface runoff from the service area.

The benefits derived are:

1. Effective collection, transport and treatment (if necessary) of stormwater from the service area.
2. Minimization of flooding potential in service area.
3. Prevention of stream erosion.
4. Enhancement of water quality in, and downstream of, the service area.

The benefits will accrue to all properties in the service area to one degree or other. However, quantifying the benefits to a particular property is difficult and must pass legal muster if it is to be sustained. If stormwater utilities become common in Maine some legislative action to clarify laws may be required.

How can these benefits be quantified for application to revenue recovery and an equitable rate structure?

The benefits derived are essentially based on several technical factors, i.e.;

- Total area of parcel
- Non-pervious area
- Type of pervious area surface, i.e., lawn, field, wooded
- Pollutants picked up by runoff

Mitigating Factors

While the total volume of runoff from the property cannot usually be significantly altered, the peak rate of runoff can be altered through application of detention or flow retardent facilities. These facilities may be public or private. The long tem effectiveness of these facilities will depend on the maintenance effort.

The quality of runoff may vary with property use, (i.e., industrial area runoff is likely to carry more pollutants than a residential property). The runoff quality may be altered through application of on-site pre treatment facilities. Again long term maintenance is a key.

Assigning values to the above criteria for stormwater runoff to achieve the most equitable process for gaining revenue to support the system will require careful analyses. Good infrastructure mapping and general area photogrammetry is essential to good program development.

During the analysis process there will be significant policy decisions that the governing body will have to make.

POLICY DECISIONS TO BE ADDRESSED

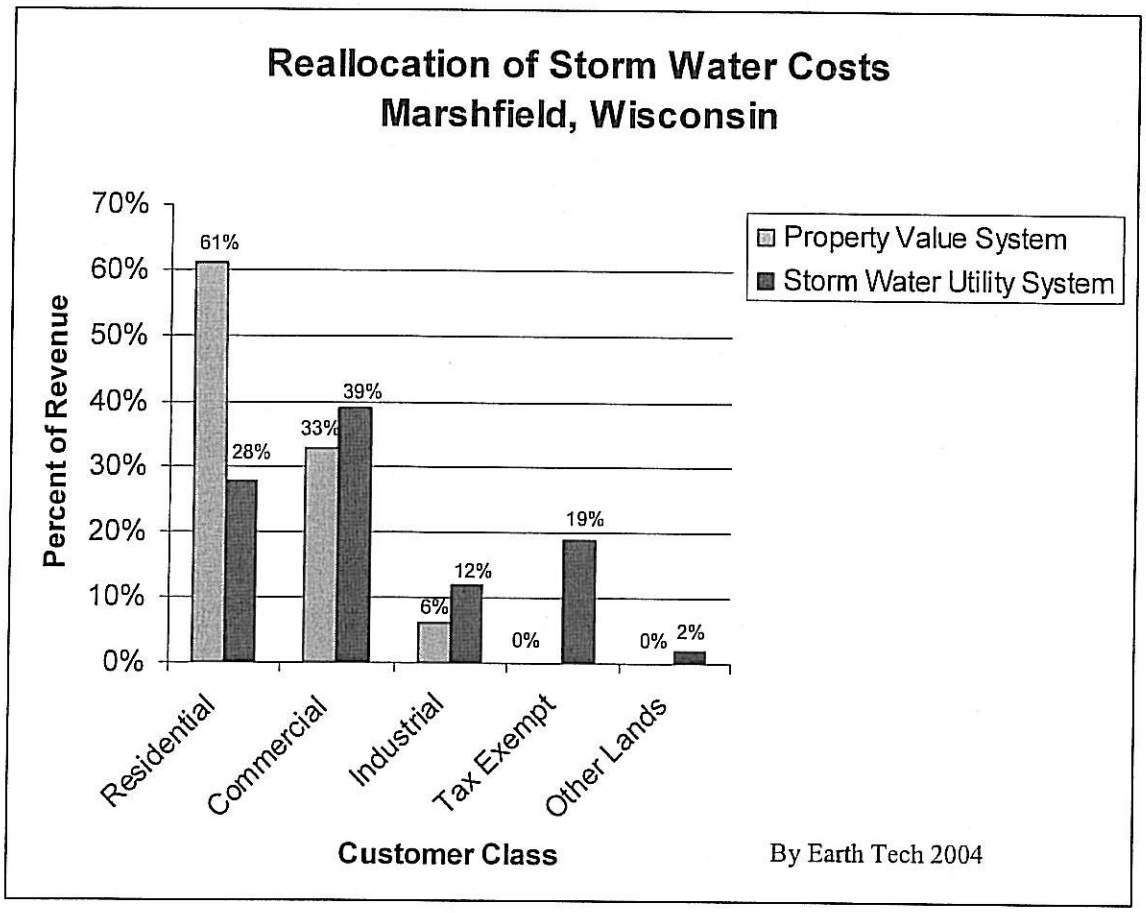
1. Should cost recovery include both developed and undeveloped property?
2. Should Public streets be included in the analyses?
3. How many standard unit categories should be established vs. individual parcel consideration?
4. Will a credit system be set up for on-site detention or other flow retardant facility?
5. Will rates be varied based on quality of runoff, and if so, will a credit or surcharge system be set up for on-site pretreatment facilities?
6. How will the water quality benefits be allocated and charged?

These questions must be made at the local level, although coordination with other regional communities to gain uniformity would be desirable. Legal advice may be required for some issues.

POTENTIAL FINANCIAL IMPACTS OF UTILITY

Changing from a general tax base support system to a benefit charge support system will cause a significant reallocation of the costs of stormwater management.

A study conducted by Earth Tech for the City of Marshfield, Wisconsin graphically illustrated the reallocation of cost for its stormwater system. This is illustrated on the following graph.



PROGRAM IMPLEMENTATION

As the Community implements its stormwater Phase II program it would appear beneficial to concurrently consider a process for implementing and financing the program's recommendations. This would include the institutional alternatives discussed previously.

If the Community believes that the stormwater utility concept has merit and should be investigated further, the following implementation process is suggested:

1. Conduct preliminary evaluation study of applying "Utility" concept to the community.
2. Bring preliminary evaluation report and cost projections before the governing body for determination of whether to proceed with "Utility" concept.
3. If governing body action is affirmative, proceed with detailed planning for establishment of a stormwater "Utility" for the Community.
4. Implement stormwater utility.

PRELIMINARY EVALUATION STUDY

A. Determine if a multi-jurisdictional stormwater utility is practical for the Community.

B. Perform a preliminary planning and evaluation study of actual application of the utility concept to the Community, or the service area if a multi-jurisdictional utility is to be considered.

The basic framework of this study would include:

1. Develop a management and operational structure for the utility including tentative staffing, space requirements, equipment requirements, etc. considering a "Utility" under existing Community Government and a stand alone utility.
2. Define specific functions to be assigned to the stormwater utility, i.e., street sweeping, catch basin cleaning, storm sewer maintenance, etc.
3. Develop a tentative annual budget for management and operation of the utility.
4. In conjunction with Phase II planning develop a tentative five (5) year capital improvement program.
5. Estimate approximate total revenue requirements to support the utility.
6. Through sampling of single family residential areas utilizing aerial photos, topo plans and land use plans establish a standard runoff unit for application in a rate structure. Consider both impervious and pervious areas to establish appropriate runoff factors.
7. Through sampling of a variety of non-single family home areas and land uses, establish the equivalent standard runoff unit that would be applied to each.
8. Through review of aerial photos and land use maps of a service area. wide basis and the sampling accomplished under the above, make a general magnitude estimate of the total number of standard equivalent runoff units that will be served by the utility.

9. Combining the estimated utility revenue requirements with the approximate number of standard runoff units, estimate an approximate annual charge per unit.
10. Consider possible applications of credits for on-site quantity and quality mitigation measures, surcharges for uncontrolled runoff with special quality problems.
11. Prepare preliminary report describing the studies made, the cost data generated and recommendations.
12. Present report to governing body for determination of whether the utility concept for stormwater management is in the best interest of the Community.

At this point the governing body should have the information on which to base judgment on adoption or rejection of the utility concept. Development of the final utility plan will require good mapping and documentation of the existing infrastructure, refinement of operative costs, and development of a sound five year capital improvement program. There will be significant effort required to implement a successful program. The technical service costs for both the initial planning study and detailed "utility" set up will vary significantly depending on the size of the service area and the availability of good mapping and other support data.

CITIZEN PARTICIPATION

The implementation of a stormwater utility will reallocate the costs of stormwater management as illustrated in the forgoing. This will impact citizens and property owners in one way or another. It will be desirable to establish a citizen's group with representation from various property categories to act as a sounding board for concepts and ideas developed during the preliminary study. Resources available from state and regional bodies can also be very helpful in making citizens aware of the impact of stormwater and the benefits of its proper management.

COORDINATION WITH EXISTING SEWER DISTRICT

It should be recognized that some portion of the stormwater runoff may enter the sewer system managed and operated by an independent Sewerage District. While the long term goal may be to separate stormwater from the sanitary system, there will undoubtedly be contributions of runoff for the foreseeable future. Thus, the planning study must develop equitable revenue sharing with the District (if one exists) in relation to the services it provides.

This overview of stormwater management through user fees was prepared by Aquarion Engineering Services of Portland, Maine as a guide to Maine Communities considering established a stormwater utility for its stormwater management program. We hope it will be helpful to community leaders and administrators. If further information is desired please call Kristie Rabasca at 828-1272 ext. 33.

Appendix C

Existing Culvert Inventory

York Culvert Survey

ID	Old ID (field) 574	Map (Grid #)	Comments	Material	Diameter or Height (inches)	Length (feet)	Invert In (feet)	Invert Out (feet)	Manning's Number	Slope	Approximate Cover over Culvert Crown at Road Crown (feet)	Culvert Condition	Sediment Conditioin	Sediment Depth (inches)
CUL_001a	108	04-11		CMP	30	35	53.92	53.84	0.024	0.0023	1.42	Corroded	Clear	0
CUL_001b	108	04-11	Inlet mostly Clogged	CMP	24	35	54.47	54.30	0.024	0.0049	1.42	Good	Mostly clogged	18
CUL_002a	109	04-11	Brush Pile Blocking Inlet	CMP	33	35	45.77	45.60	0.024	0.0049	1.17	Fair	Partly clogged	11
CUL_002b	109	04-11	Brush Pile Blocking Inlet	CMP	33	35	45.77	45.60	0.024	0.0049	1.17	Fair	Partly clogged	11
CUL_002c	109	04-11	Brush Pile Blocking Inlet	CMP	33	35	45.77	45.60	0.024	0.0049	1.17	Fair	Partly clogged	11
CUL_003	110	04-11	Pond Not Moddled	CMP	12	50	44.33	43.08	0.024	0.0250	3.30	Corroded	Clear	0
CUL_004	111	04-11	Pond Not Moddled	Cast iron	18	85	44.22	44.05	0.024	0.0020	4.17	Good	Fully clogged	12
CUL_005	161	04-11	25" x 26.5" Box Culvert	Concrete	26.5	125	26.60	22.68	0.025	0.0313	4.75	Good	Clear	0
CUL_006	163	04-11	Jagged edge - Public Hazard	CMP	12	35	43.92	42.58	0.024	0.0381	1.25	Bad	Partly clogged	6
CUL_007	164	04-11		CMP	12	28	35.42	35.25	0.024	0.0060	1.17	Fair	Partly clogged	4
CUL_008	166	04-11	Drains CB 003	CMP	18	70	50.63	50.38	0.024	0.0036	2.29	Good	2-inches	2
CUL_009	169	04-11	Recommend CB on upstream	CMP	12	25	58.83	58.67	0.024	0.0067	1.25	Fair	Partly clogged	8
CUL_010	167	04-12	Appears adequate	RCP	18	50	30.70	29.95	0.013	0.0150	2.38	Good	Partly clogged	8
CUL_011	168	04-12	Appears adequate	RCP	24	40	26.85	25.93	0.013	0.0229	4.21	Good	Clear	0
CUL_012	236	04-12	Driveway Errosion	CMP	18	40	6.90	6.32	0.024	0.0146	1.79	Fair	Mostly clogged	14
CUL_013	237	04-12	Culvert does not cross road	Clay Tile	18	35	6.00	5.80	0.013	0.0057		Fair	Partly clogged	9
CUL_014	7	05-08		RCP	36	70	131.00	129.00	0.013	0.0286	2.80	Good		
CUL_015	8	05-08	Note?	RCP	15	60	145.50	145.40	0.013	0.0017		Good		
CUL_016	2	05-09	Note?	RCP	12	80	98.90	98.90	0.013	0.0000		Good		
CUL_017	3	05-09		RCP	48	95	99.20	99.00	0.013	0.0021		Good		
CUL_018	4	05-09		RCP	15	65	116.37	114.87	0.013	0.0231	2.83	Good		
CUL_019	5	05-09		RCP	18		95.80	95.80	0.013					
CUL_020	119	05-10	Clean Ditch	Cast Iron	15	90	45.39	43.77	0.025	0.0181	3.27	Good	Trash in ditch	0
CUL_021	116	05-10	Negative Slope: Invert differen	Cast iron	30	85	46.96	47.08	0.025	-0.0015	2.48	Good	Clear	0
CUL_022	101	05-10		ADS	24	40	50.38	50.17	0.010	0.0052	3.73	Good	Clear	0
CUL_023	102	05-10	Structural failure at inlet and ro	ADS	18	40	53.00	52.46	0.010	0.0135	1.77	Bad	Clear	0
CUL_024	105	05-10		CMP	15	25	41.08	40.79	0.024	0.0117	2.81	Good	Partly clogged	5
CUL_025	112	05-10	Completely rotten	CMP	18	100	45.27	44.93	0.024	0.0033	6.50	Corroded	Clear	0
CUL_026	106	05-11	Inlet Conrol	CMP	18	25	33.90	33.65	0.024	0.0100	1.63	Corroded	Partly clogged	6
CUL_027	171	05-12		CMP	15	50	31.03	30.53	0.024	0.0100	6.17	Good	Partly clogged	7
CUL_028	172	05-12		CMP	12	35	20.83	20.50	0.024	0.0095	2.33	Fair	Fully clogged	12
CUL_029	170	05-12	Entrance completely buried	CMP	12	40	19.75	19.33	0.024	0.0104	2.46	Bad	Partly clogged	6
CUL_030	173	05-12	Brush Pile Blocking Outlet	CMP	24	45	8.82	8.40	0.024	0.0093	2.29	Corroded	Clear	0
CUL_031	176	05-12	Drains unnumbered CB	CMP	12	120	22.20	21.00	0.024	0.0100	3.50	Good	Clear	0
CUL_032	175	05-12		CMP	12	50	6.07	5.90	0.024	0.0033	2.42	Good	Partly clogged	1.5
CUL_033	120	06-08		CMP	15	30	84.50	84.33	0.024	0.0056	1.83	Good	Clear	0
CUL_034	159	06-08	Bridge with natural bottom and	Concrete	24	70	56.80	56.55	0.035	0.0036	3.13	Good	-	-
CUL_035	1	06-09	Driveway culvert	CMP	12	45	83.67	82.00	0.024	0.0370	2.17	Good	Clear	0
CUL_036	114	06-09		RCP	48	80	66.70	65.83	0.013	0.0109	4.44	Good	Clear	0
CUL_037	113	06-09		RCP	15	80	61.83	61.50	0.013	0.0042	2.08	Good	Clear	0
CUL_038	115	06-09		Cast iron	24	110	58.25	57.92	0.025	0.0030	3.92	Good	Outlet Partly clogged	8
CUL_039	142	06-09		CMP	12	25	43.33	43.17	0.024	0.0067	0.75	Bad	Clear	0
CUL_040a	141	06-09		CMP	15	40	28.18	27.77	0.024	0.0104	2.38	Fair	Clear	0
CUL_040b	141	06-09		CMP	18	40	27.85	27.43	0.024	0.0104	2.46	Fair	Clear	0
CUL_040c	141	06-09		CMP	18	40	27.77	27.43	0.024	0.0083	2.50	Fair	Clear	0
CUL_041	140	06-10		RCP	18	50	42.20	39.87	0.013	0.0467	5.67	Good	Outlet Mostly clogged	13.5
CUL_042	139	06-10	Direction? Little evidence of flc	RCP	15	50	29.32	28.57	0.013	0.0150	3.21	Good	Mostly clogged	11

ID	Old ID (field)	Map (Grid #)	Comments	Material	Diameter or Height (inches)	Length (feet)	Invert In (feet)	Invert Out (feet)	Manning's Number	Slope	Culvert Crown at Road Crown (feet)	Culvert Condition	Sediment Conditioin	Sediment Depth (inches)
	574													
CUL_043	136	06-10	Tail water control: 2" water at i	PE	8	25	14.2	14.1	0.010	0.0040	0.88	Good	Clear	0
CUL_044	135	06-10	7" water at inlet	ADS	12	30	14.60	14.18	0.010	0.0139	2.21	Good	Clear	0
CUL_045	134	06-10		CMP	12	20	42.72	42.51	0.024	0.0104	1.19	Fair	Clear	0
CUL_046	133	06-09	Culvert crushed on both ends	CMP	12	20	46.98	46.52	0.024	0.0229	0.85	Bad	Clear	0
CUL_047	-	05-10	Kieths first day. steady flow	CMP	30	40	23.35	23.10	0.024	0.0063	3.38	Bad	Clear	0
CUL_048	-	06-10	Kieths first day	CMP	12	40	22.10	21.85	0.024	0.0063	1.13	Bad	Clear	0
CUL_049	-	06-11	Kieths first day	ADS	24	40	12.90	12.65	0.010	0.0063	1.13	Good	Clear	0
CUL_050	-	06-11	Kieths first day. Flowing almos	ADS	18	40	9.43	9.10	0.010	0.0083	2.33	?		
CUL_051	502	06-12	Field/lawn drain	RCP	12	30	25.50	25.00	0.013	0.0167	1.35	Good		
CUL_052	150	07-07	Ponding, outlet submerged, inl	CMP	12	25	73.17	73.00	0.024	0.0067	1.42	Fair		
CUL_053	149	07-07	1" flow	CMP	12	60	61.27	59.68	0.024	0.0264	3.63	Good	Clear	0
CUL_054	156	07-08		Cast Iron	18	40	79.75	77.08	0.025	0.0667	3.08	Good	Clear	0
CUL_055	154	07-08		Cast Iron	15	95	67.20	66.70	0.025	0.0053	3.50	Good		
CUL_056	153	07-08	Water flowing across road on	ADS	15	45	61.90	61.57	0.010	0.0074	1.42	Good	Clear	0
CUL_057	9	07-08	1" flow	ADS	15	40	59.00	58.80	0.010	0.0050	2.15	Good		
CUL_058	10	07-08	Outlet overgeown with weeds	CMP	12	50	58.73	58.40	0.024	0.0067	2.33	Good	Partly clogged	6
CUL_059	11	07-08	Grown up weeds	CMP	15	45	58.81	58.52	0.024	0.0065	2.19	Good		
CUL_060	12	07-08	Could use some maintenance	CMP	12	65	71.07	70.73	0.024	0.0051	2.00	Good		
CUL_061	13	07-08		CMP	12	55	72.58	72.00	0.024	0.0106	2.71	Good		
CUL_062	157	07-08		Concrete	8	40	57.00	56.67	0.013	0.0083	3.50	Fair	Outlet Mostly clogged	5
CUL_063	158	07-08		Ductile Iron	12	40	56.40	56.00	0.025	0.0100	3.80			
CUL_064	123	07-09	52" x 80" CMP Arch	CMP	52	50	52.50	51.50	0.024	0.0200	1.17	Bad	Clear	0
CUL_065	128	07-09		CMP	12	35	68.00	66.25	0.024	0.0500	1.88	Fair		
CUL_066	129	07-09		CMP	12	80	65.90	63.00	0.024	0.0363	-			
CUL_067	130	07-09	Road underdrain	ADS	12 ?		64.00	64.00	0.010			Good	Clear	
CUL_068	131	07-09		RCP	12	30	72.67	72.33	0.013	0.0111	1.00	Good	Clear	
CUL_069	132	07-09		RCP	15	45	59.88	59.55	0.013	0.0074	1.83	Good	Clear	
CUL_070	122	07-10		PVC	4	20	44.30	43.97	0.010	0.0167	0.83	Good	Clear	
CUL_071	121	07-10	11" water in Inlet on 10/13/05	CMP	12	20	38.10	37.95	0.024	0.0075	0.67	Corroded		
CUL_072	143	07-10	12" Flow on 10/17/05	CMP	48	80	35.10	33.50	0.024	0.0200	7.30	Corroded		
CUL_073	144	07-10	1" Flow on 10/17/05	RCP	18	55	38.33	37.28	0.013	0.0189	4.40	Good		
CUL_074a	137	07-11	24"X 18" CMP Ellipse	CMP	18	70	7.90	7.70	0.024	0.0029	3.60	Unable to Observe		
CUL_074b	137	07-11	24"X 18" CMP Ellipse	CMP	18	70	7.90	7.70	0.024	0.0029	3.60	Unable to Observe		
CUL_074c	137	07-11	24"X 18" CMP Ellipse	CMP	18	70	7.90	7.70	0.024	0.0029	3.60	Unable to Observe		
CUL_075	???	07-12	Outfall??????????				16.30	16.30			0.00			
CUL_076	294	08-05	Outlet not surveyed	RCP	36	180	42.00	41.00	0.013	0.0056	15.70	Good		
CUL_077	295	08-05	Ponding up and down stream a	CMP	12	30	49.83	49.58	0.024	0.0083	1.29	Fair		
CUL_078	147	08-06		Cast iron	24	80	54.98	53.73	0.025	0.0156	3.54	Good		8
CUL_079	148	08-06	68" x 48" Aluminum Arch	CMP Al	48	45	32.20	32.28	0.024	-0.0019	2.96	Good		
CUL_080	23	08-07		CMP	48	55	49.05	48.63	0.024	0.0076		Corroded		
CUL_081	22	08-07		CMP	36	55	43.85	43.43	0.024	0.0076		Corroded		
CUL_082	152	08-07	52" x 96" concrete box with na	Concrete	52	65	32.00	31.90	0.030	0.0015	2.72	Good		
CUL_083	151	08-07		CMP	24	70	34.83	34.60	0.024	0.0033	2.28	Good		
CUL_084	499	08-07		CMP	15	40	41.17	41.00	0.024	0.0042	1.17	Fair		
CUL_085	498	08-07		CMP	15	48	67.47	67.05	0.024	0.0087	2.79	Fair		
CUL_086	497	08-07		CMP	15	45	79.03	78.87	0.024	0.0037	2.00	Good		
CUL_087	14	08-08	Driveway culvert	ADS	12	40	55.00	53.80	0.010	0.0300		Good		
CUL_088	15	08-08	Note?	ADS	15	40	54.00	53.80	0.010	0.0050	2.45	Good		
CUL_089	16	08-08	No Info?				56.30	56.30			0.00			

ID	Old ID (field)	Map (Grid #)	Comments	Material	Diameter or Height (inches)	Length (feet)	Invert In (feet)	Invert Out (feet)	Manning's Number	Slope	Culvert Crown at Road Crown (feet)	Culvert Condition	Sediment Conditioin	Sediment Depth (inches)
	574													
CUL_090	17	08-08	Note?	CMP	18	40	59.33	59.00	0.024	0.0083	2.83	Fair		
CUL_091	18	08-08	Driveway culvert	SD?	10	70	59.60	59.33 ?		0.0039	3.20			
CUL_092	19	08-08	Bottom gone	CMP	18	50	74.20	73.70	0.024	0.0100	1.75	Corroded		
CUL_093	21	08-08	Inverts? Bottom is going	CMP	36	55	48.75	48.50	0.024	0.0045		Corroded		
CUL_094	20	08-08	Outlet completely blocked	CMP	15	45	74.67	74.50	0.024	0.0037	1.17	Good	Outlet Mostly clogged	15
CUL_095	24	08-08		CMP	12	40	65.67	65.50	0.024	0.0042	2.42	Corroded		
CUL_096	210	08-10		ADS	12	60	27.12	26.70	0.010	0.0069	2.29	Good		
CUL_097	211	08-10		ADS	36	70	26.10	25.43	0.010	0.0095	2.83	Good		
CUL_098	242	08-10	Outlet?	CMP	12	200	6.45	6.00	0.024	0.0023	2.98	Fair	Inlet Partly clogged	6
CUL_099	240	08-10		ADS	12	25	14.97	14.72	0.010	0.0100	0.46	Good		
CUL_100	-	08-10	Water at road elevation	PE	6	25	12.00	11.90	0.010	0.0040	0.55			
CUL_101	200	08-10		RCP	21	20	7.55	7.45	0.013	0.0050	1.05	Good		
CUL_102a	204	08-10		RCP	24	30	9.78	9.53	0.013	0.0083	2.54	Good	Partly clogged	5
CUL_102b	204	08-10		RCP	18	30	10.03	9.70	0.013	0.0111	2.83	Good	Clear	0
CUL_103a	205	08-10		CMP	24	70	24.60	23.00	0.024	0.0229	2.30	Corroded	Clear	
CUL_103b	205	08-10		CMP	24	70	24.60	23.00	0.024	0.0229	2.30	Corroded	Clear	
CUL_104	206	08-10	36" x 24" Arch	CMP	24	55	29.10	28.90	0.024	0.0036	1.60	Fair	Partly clogged	3
CUL_105	208	08-10		ADS	30	55	34.37	34.20	0.010	0.0030	3.92	Good	Clear	
CUL_106	256	08-10	CB Outfall	CMP cast ir	15		14.80	14.80						
CUL_107	254	08-10	CB Outfall				14.70	14.70			0.00			
CUL_108	244	08-10	CB Outfall				14.60	14.60			0.00			
CUL_109	245	08-10	CB Outfall				13.20	13.20			0.00			
CUL_110	258	08-10	CB Outfall				12.60	12.60			0.00			
CUL_111	191	08-11	Outfall	CMP	24	70	6.30	6.10	0.024	0.0029	4.90	Good	Clear	
CUL_112	193	08-11	Outfall: 50" x 60" Box	Concrete	50	55	5.65	5.55	0.016	0.0018	3.03	Fair	Some Cobbles in inlet	
CUL_113	-	08-11	CB Outfall				12.70	12.70			0.00			
CUL_114	322	09-03	18" x 24" ellipse. Little evidenc	CMP	18	50	20.70	20.62	0.024	0.0017	1.04	Fair		
CUL_115	323	09-03		CMP	12	40	18.30	17.80	0.024	0.0125	2.75	Fair		
CUL_116	324	09-03		CMP	15	55	17.47	17.20	0.024	0.0048	3.22	Good		
CUL_117	330	09-03		CMP	36	40	15.80	15.55	0.024	0.0063	1.13	Good		
CUL_118	325	09-03	40' on outlet side is 24" ADS	CMP	18	315	17.60	16.60	0.024	0.0032	4.00	Good		
CUL_119	321	09-04	Flow direction?	RCP	18	120	30.50	30.50	0.013	0.0000	8.80			
CUL_120	317	09-04		RCP	12	120	35.42	34.42	0.013	0.0083	1.58	Bad		
CUL_121a	320	09-04		RCP	30	95	28.80	28.72	0.013	0.0009	5.54	Good		
CUL_121b	320	09-04		RCP	30	95	36.80	36.80	0.013	0.0000		Good		
CUL_122	328	09-04	Inlet and outlet completely burı	?	?	70	27.10	27.10 ?		0.0000				
CUL_123	289	09-05	Outlet buried. Possibly rip rap ı	CMP	12	50	63.12	62.00	0.024	0.0223	2.64	Good		
CUL_124	290	09-05		CMP	12	40	63.65	62.98	0.024	0.0167	2.08	Good		
CUL_125	296	09-05		CMP	12	30	69.80	69.47	0.024	0.0111	1.17	Fair		
CUL_126	146	09-06		CMP	18	100	52.38	50.63	0.024	0.0175	4.29	Corroded		
CUL_127	495	09-06	Drains duck pond: high phospl	?	12	25	65.00	64.88 ?		0.0047	1.86	Good		
CUL_128	496	09-06	Note? Feeds duck pond	CMP	15	40	73.00	72.43	0.024	0.0142	1.63	Good		
CUL_129	493	09-06	Note? erroslon larger culvert?	CMP	15	40	72.75	72.60	0.024	0.0038	1.58	Good		
CUL_130	492	09-06	Note?	CMP	12	40	80.37	78.95	0.024	0.0354	2.54			
CUL_131	27	09-08		CMP	30	60	51.93	51.70	0.024	0.0039	2.78	Corroded	Partly clogged	
CUL_132	28	09-08	Water but no flow	CMP	18	70	51.78	51.60	0.024	0.0026	4.51	Fair		
CUL_133	26	09-08		CMP	36	120			0.024		53.00	Corroded	Partly clogged	18
CUL_134	25	09-09		Concrete	72	45	26.60	26.50	0.030	0.0022	2.55	Good		
CUL_135	218	09-09		CMP	15	35	22.33	22.08	0.024	0.0071	1.54	Fair		

ID	Old ID (field)	Map (Grid #)	Comments	Material	Diameter or Height (inches)	Length (feet)	Invert In (feet)	Invert Out (feet)	Manning's Number	Slope	Culvert Crown at Road Crown (feet)	Culvert Condition	Sediment Conditioin	Sediment Depth (inches)
	574													
CUL_136	219	09-09		CMP	15	35	27.63	26.58	0.024	0.0298	2.15	Good		
CUL_137	214	09-09	96" x 72" bridge	Concrete	72	45	12.30	12.20	0.030	0.0022	2.55	Fair	Inlet Partly clogged	
CUL_138	222	09-10	300" x 66" bridge	Concrete	66	55	8.00	7.50	0.015	0.0091	2.95	Good		
CUL_139	225	09-10	CB Outfall	Concrete	30	-		5.00	0.015					
CUL_140	260	09-10	CB Outfall				14.90	14.90		#DIV/0!				
CUL_141	257	09-10	Outfall: badly deteriorated	CMP cast ir	36	220	4.50	3.50	0.024	0.0045	7.90	Bad	small amoumt of sedi	4
CUL_142	238	09-10	Changes to a 20" x 20" box cul	ADS	18	80	10.80	10.00	0.010	0.0100	1.90	Good		
CUL_143	213	09-10	Little evidence of flow	CMP	18	50	22.90	22.40	0.024	0.0100	4.25	Bad	Partly clogged	6
CUL_144	37	10-02	30" X 32" box with natural bott	Concrete	32	40	9.30	9.47	0.030	-0.0042	1.75			
CUL_145	38	10-02		CMP	18	60	18.22	18.13	0.024	0.0014	3.63	Good	Partly clogged	9
CUL_146	40	10-05	Dammaged outlet: clean or rep	CMP	12	65	47.67	45.50	0.024	0.0333	1.92	Bad	Partly clogged	
CUL_147	41	10-05		CMP	12	42	46.90	45.32	0.024	0.0377	1.79	Good		
CUL_148	42	10-6		CMP	12	40	39.18	37.35	0.024	0.0458	2.33	Fair	Outlet Partly clogged	6
CUL_149	43	10-6	Rusted through	CMP	12	30	39.40	38.82	0.024	0.0194	1.29	Corroded	Outlet Partly clogged	6
CUL_150	44	10-6		CMP	12	40	38.23	38.40	0.024	-0.0042	2.58	Bad		
CUL_151	69	10-6	Bottom gone and colapsed	CMP	24	36	16.78	16.23	0.024	0.0150	2.40	Bad	Partly clogged	?
CUL_152	70	10-6	Not surveyed because this culvert was under construction				10.50	10.50			0.00			
CUL_153a	72	10-6	Rusted out completely	CMP	30	50	6.28	5.70	0.024	0.0117	2.21	Bad		
CUL_153b	71	10-6	Rusted out completely	CMP	30	50	6.12	5.53	0.024	0.0117	2.38	Bad		
CUL_154	75	10-6		RCP	15	30	40.50	40.33	0.010	0.0056	0.33			
CUL_155	76	10-6	CB215 Outfall				46.00	46.00			0.00	Corroded		
CUL_156	62	10-07		RCP	24	190	42.00	38.00	0.013	0.0211	17.40	Good		
CUL_157	89	10-07		PE	12	80	54.00	53.50	0.010	0.0063	1.05	Good		
CUL_158	90	10-07	Recommend replacement or cl	CMP	12	45	53.00	52.50	0.024	0.0111	1.15	Corroded	Mostly clogged	9
CUL_159	724	10-08	Note? Possible future washout	CMP	18	40	38.00	37.70	0.024	0.0075	1.65	Fair		
CUL_160	271	10-08		CMP	24	60	35.32	34.98	0.024	0.0056	3.75	Bad	Clear	
CUL_161	272	10-08		CMP	12	40	39.67	39.40	0.024	0.0067	1.47	Fair	Outlet Mostly clogged	12
CUL_162	286	10-08		CMP	12	40	42.05	41.80	0.024	0.0063	2.38	Fair	Outlet Partly clogged	4
CUL_163	285	10-08		CMP	15	40	39.00	38.60	0.024	0.0100	3.45	Fair	Outlet Partly clogged	4
CUL_164	284	10-08	30" x 40" ellipse	CMP	30	80	35.70	35.20	0.024	0.0063	2.75	Fair	Outlet Partly clogged	10
CUL_165	-	10-09	Partial survey	CMP	15	130	42.00	42.00	0.024	0.0000		Bad		
CUL_166	-	10-09	Partial survey	ADS	12	50	42.20	42.00	0.010	0.0040				
CUL_167	268	10-09	Residint has problems with por	CMP	12	150	48.53	46.00	0.024	0.0169	2.93	Corroded		
CUL_168	273	10-09		CMP	24	35	33.08	32.92	0.024	0.0048	2.50	Fair	Clear	
CUL_169	281	10-09		CMP	18	40	23.40	23.23	0.024	0.0042	3.58	Corroded	Clear	
CUL_170	278	10-09	32" x 40" ellipse	CMP	32	40	29.83	29.50	0.024	0.0083	6.17			
CUL_171	-	10-10		RCP	12	40	33.50	33.50	0.013	0.0000				
CUL_172	267	10-10		Cast iron	24	40	15.53	15.20	0.020	0.0083	3.33	Good	Clear	
CUL_173	265	10-10		RCP	36	50	10.40	10.03	0.013	0.0073	1.98	Good	Clear	
CUL_174	266	10-10	Outfall structure for CUL_173	Concrete	36	85	9.00	8.00		0.0118				
CUL_175	68	11-06	Recommend replacement or cl	CMP	12	36	8.30	8.30	0.024	0.0000		Corroded		
CUL_176	67	11-06	Note? Inlet and outlet submerg	CMP	15	60	8.70	8.70	0.024	0.0000				

Appendix D

Summary of Grant-In-Aid Programs

97.029 FLOOD MITIGATION ASSISTANCE

(FMA)

FEDERAL AGENCY
DEPARTMENT OF HOMELAND SECURITY

AUTHORIZATION
National Flood Insurance Reform Act of 1994, Title V, Sections 553 and 554, Public Law 103-325, 42 U.S.C. 5154a.

OBJECTIVES
To assist States and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP).

TYPES OF ASSISTANCE
Project Grants.

USES AND USE RESTRICTIONS
States are encouraged to use FMA planning, project and technical assistance grants to reduce the number of repetitive loss structures insured by the NFIP. More specifically, the emphasis is on reducing target repetitive loss properties that include structures with four or more losses, and structures with two or more losses where cumulative payments have exceeded the property value. Planning Grants may be used to assist States and communities in developing and updating Flood Mitigation Plans. Eligible activities under this grant are: conducting local planning discussions, contracting for consulting technical services such as engineering and planning; surveying structures at risk; and assessing structures subject to repetitive flood loss. There are several restrictions on Planning Grants. Planning Grants will not exceed a maximum of $1,500,000 nationally each year. A Planning Grant will not be awarded to a State or a community more than one every 5 years. Individual Planning Grants will not exceed $150,000 to any State applicant, or exceed $50,000 to any community applicant. The total planning grant made in any fiscal year to any State, including communities located in the State will not exceed $300,000. Project Grants may be used to assist States and communities in implementing flood mitigation projects to reduce the risk of flood damage to structures insured or insurable under the National Flood Insurance Program. Eligible activities under this grant include the acquisition, relocation, or elevation of insured structures. Only mitigation activities specified in a FEMA-approved Flood Mitigation Plan are eligible for an FMA Project Grant. There are several restrictions on Project Grants. The combined total of project and technical assistance awarded to the State and all communities in that State is

limited to $20,000,000 in a 5-year period. There are also limits on the amount of Project Grant funds that any one State or community can receive in a 5- year period. States can receive individual grants not totaling more than $10,000,000 in a 5-year period. Communities can receive individual project grants not totaling more than $3,300,000 in a 5-year period. Up to 10 percent of Project Grant allocations annually may be used for Technical Assistance. The only applicants eligible for Technical Assistance Grants are State agencies or departments responsible for administering FMA. Eligible activities under this grant are: conducting community site visits; reviewing draft applications or plans; participating in planning meetings; providing planning workshops/materials; and, providing grants management workshops/ materials.

ELIGIBILITY REQUIREMENTS

Applicant Eligibility

Eligible applicants Technical Assistance Grants are State agencies or departments that are responsible for administering the FMA program. Eligible applicants for Planning Grants are States and communities participating in the NFIP. Suspended communities or communities on probation under the NFIP are not eligible. Eligible applicants for Project Grants are States and communities participating in the NFIP, and with a FEMA-approved Flood Mitigation Plan. Suspended communities or communities on probation under the NFIP are not eligible.

Beneficiary Eligibility

States and communities.

Credentials/Documentation

Grant awards will be determined in accordance with OMB Circulars No. A-102 and No. A-87 for State and local governments. Awards made to Institutions of Higher Education, Hospitals and Other Non-Profit Organizations will be required to follow the requirements of OMB Circulars No. A-110 and No. A-21.

APPLICATION AND AWARD PROCESS

Preapplication Coordination

Application Process for FMA Project Grants: States apply through grant negotiation. State FMA point of contact reviews and prioritizes applications. FEMA reviews and ensures projects meet environmental regulations and minimum eligibility requirements. FEMA allocates the FMA grants for planning, technical assistance, and projects annually to each FEMA region for distribution among States that have requested participation in the program. For a State to receive funds, it should request participation in the FMA during its annual grant negotiation with the FEMA Regional Office. This program is eligible for coverage under E.O. 12372, "Intergovernmental Review of Federal Programs." An applicant should consult the office or officials designated as the single point of contact in his or her State for more information on the process the State requires to be followed in applying for assistance, if the State has selected the program for review.

Application Procedure

The State applies through the annual grant negotiation. The State point of contact reviews,

prioritizes, and selects applications from community for funding planning and project grants; FEMA reviews and ensures that projects meet environmental regulations and minimum eligibility requirements. Forms Required: A State Flood Mitigation Plan, SF 424 Application for Federal Assistance, Program Narrative, 20-20 Budget Information-Construction Programs, 20-16(A)-(C) Assurances and Certifications, and SF-LLL Lobbying Disclosure.

Award Procedure

State applies through grant negotiation, State reviews, prioritizes, and selects applications from community for funding Planning and Project Grants. Director allocates funds to the State, and the State distributes them to the community.

Deadlines

The FEMA Regional Director will notify States regarding the program schedule at the beginning of each fiscal year.

Range of Approval/Disapproval Time

Not applicable.

Appeals

Not applicable.

Renewals

Not applicable.

ASSISTANCE CONSIDERATIONS

Formula and Matching Requirements

The FEMA Director allocates available funds for FMA each fiscal year in a lump sum to each FEMA Region for distribution to the States and communities. Under the current formula, each State and territory receives a base amount of $10,000 for Planning, and $100,000 for Projects. The remaining funds are distributed based on the number of NFIP policies, repetitive loss structures, and other such criteria as the Director may determine in furtherance of the disaster resistant community concept. FEMA may contribute up to 75 percent of the cost of eligible activities. The remaining percent must be met by matching requirements from State government or other nonfederal funding sources. Up to one-half of the nonfederal share may be met by in-kind contributions from third parties. The remaining half of the nonfederal share must be met by State and local government expenditures and cash funds identified at the time of application.

Length and Time Phasing of Assistance

The average performance period for FMA grants is generally 2 years, but may be extended once for planning grants and twice for project grants.

POST ASSISTANCE REQUIREMENTS

Reports

Performance reports are due 30 days after the end of the second quarter (April 30) and 30 days after the end of the fourth quarter (October 30). The final performance report is due 90 days after the expiration or termination of grant support if there is a change to the October financial report. Financial reports are due 30 days after the end of each quarter. Final financial and performance reports are due 90 days after the expiration or termination of grant support.

Audits

In accordance with the provisions of OMB Circular No. A-133 (Revised, June 27, 2003), "Audits of States, Local Governments, and Non-Profit Organizations," nonfederal entities that expend financial assistance of $500,000 or more in Federal awards will have a single or a program-specific audit conducted for that year. Nonfederal entities that expend less than $500,000 a year in Federal awards are exempt from Federal audit requirements for that year, except as noted in Circular No. A-133.

Records

Grant records include financial and programmatic records, supporting documents, statistical records, and other records of recipient or subrecipient which are required to be maintained by 44 CFR Part 13.42, program regulations or the grant agreement. Grant records shall be retained for a period of 3 years from the day the recipient submits its final expenditure report. If any litigation, claim, negotiation, audit, or other action involving the records has been started before the expiration of the 3-year period, the records must be retained until completion of the action and resolution of all issues which arise from it, or until the end of the regular 3-year period, whichever is later.

FINANCIAL INFORMATION

Account Identification

70-0701-0-1-453.

Obligations

(Grants) FY 05 $20,000,000; FY 06 $28,000,000; and FY 07 est $31,000,000.

Range and Average of Financial Assistance

Not available.

PROGRAM ACCOMPLISHMENTS

Program accomplishments are published in a Biennial Report to Congress as required under Section 554 of the National Flood Insurance Reform Act (NFIRA). This report is available from Ms. Margaret E. Lawless. Director, Mitigation Planning and Delivery Division, Federal Insurance and Mitigation Administration, Federal Emergency Management Agency (FEMA), 500 C Street, SW., Washington, DC 20472. Telephone: (202) 646-4621.

REGULATIONS, GUIDELINES, AND LITERATURE

None.

INFORMATION CONTACTS

Regional or Local Office

See Appendix IV of the Catalog for a listing of addresses of FEMA's Regional Offices.

Headquarters Office

Department of Homeland Security, Federal Emergency Management Agency (FEMA), c/o 245 Murray Lane - Bldg. #410, Washington, DC 20523. Telephone: 800-621-FEMA (3363)

Web Site Address

http://www.dhs.gov

RELATED PROGRAMS

None.

EXAMPLES OF FUNDED PROJECTS

Program accomplishments, including examples of funded projects, are published in a Biennial Report to Congress as required under Section 554 of the National Flood Insurance Reform Act (NFIRA). This report is available from Ms. Margaret E. Lawless, Director, Mitigation Planning and Delivery Division, Federal Insurance and Mitigation Administration, Federal Emergency Management Agency (FEMA), 500 C Street, SW., Washington, DC 20472. Telephone: (202) 646-4621.

CRITERIA FOR SELECTING PROPOSALS

Project Grants: Minimum Project Eligibility Criteria: The extent to which proposals are cost effective, conform with applicable Federal and State regulations and executive orders, are technically feasible, conform with the Flood Mitigation Plan, are physically located in an eligible community, or benefit such a community directly. Planning Grants are selected based on whether proposals are for eligible activities such as: conducting local planning discussions; contracting for consulting technical services such as engineering and planning; surveying structures at risk; and assessing structures subject to repetitive flood loss. Technical Assistance Grants are selected based on whether proposals are for eligible activities such as: conducting community site visits; reviewing draft applications and plans; participating in planning meetings; providing planning workshops/materials; and, providing grants management workshops/materials.

10.904 WATERSHED PROTECTION AND FLOOD PREVENTION

(Small Watershed Program; PL-566 Operations Phase)

FEDERAL AGENCY

NATURAL RESOURCES CONSERVATION SERVICE, DEPARTMENT OF AGRICULTURE

AUTHORIZATION

Watershed Protection and Flood Prevention Act, Public Law 83-566, 68 Stat. 666, as amended; Public Law 84-1018, 70 Stat. 1088; Public Law 85-624, 72 Stat. 563; Public Law 85-865, 72 Stat. 1605; Public Law 86-468, 74 Stat. 131, 132; Public Law 86-545, 74 Stat. 254; Public Law 87-170, 75 Stat. 408; Public Law 87-703, 76 Stat. 608; Public Law 89-337, 79 Stat. 1300; Public Law 90-361, 82 Stat. 250; Public Law 92-419, 86 Stat. 667; Public Law 95-113, 91 Stat. 913; Public Law 97-98, 95 Stat. 1213; Public Law 99-662, 100 Stat. 4196; Public Law 101-624, 104 Stat. 3359.

OBJECTIVES

To provide technical and financial assistance in carrying out works of improvement to protect, develop, and utilize the land and water resources in small watersheds.

TYPES OF ASSISTANCE

Project Grants; Advisory Services and Counseling.

USES AND USE RESTRICTIONS

Technical assistance is provided in designing, and installing watershed works of improvement. Financial assistance is provided for sharing costs of measures for watershed protection, flood prevention, agricultural water management, sedimentation control, public water based fish, wildlife, recreation; and in extending long term credit to help local interests with their share of the costs. Watershed area must not exceed 250,000 acres. Capacity of a single structure is limited to 25,000 acre-feet of total capacity and 12,500 acre-feet of floodwater detention capacity.

ELIGIBILITY REQUIREMENTS

Applicant Eligibility

Any State agency, county or groups of counties, municipality, town or township, soil and water conservation district, flood prevention or flood control district, Indian tribe or tribal organization, or any other nonprofit agency with authority under State law to carry out, maintain, and operate watershed works of improvement may apply for assistance. This program is available

in Puerto Rico, the Virgin Islands, Guam, American Samoa, the Mariana Islands and the Trust Territories of the Pacific Islands.

Beneficiary Eligibility

Any State agency, county or groups of counties, municipality, town or township, soil and water conservation district, flood prevention or flood control district, Indian tribe or tribal organization, or any other nonprofit agency with authority under State law to carry out, maintain, and operate watershed works of improvement may apply for assistance. This program is available in Puerto Rico, Guam, American Samoa, the Mariana Islands, and the Trust Territories of the Pacific Islands.

Credentials/Documentation

Applications must designate the proposed project area, be properly signed and attested to by all applicants, and set forth the need for the proposed project. Costs will be determined in accordance with OMB Circular No. A-87 for State and local governments.

APPLICATION AND AWARD PROCESS

Preapplication Coordination

The standard application forms, as furnished by the Federal agency and required by OMB Circular No. A-102, must be used for this program. Environmental assessments or an Environmental impact statements are required for all projects. This program is eligible for coverage under E.O. 12372, "Intergovernmental Review of Federal Programs." An applicant should consult the office or official designated as the Single Point of Contact in his or her State for more information on the process the State requires to be followed in applying for assistance, if the State has selected the program for review.

Application Procedure

Application forms and information are available in all NRCS offices and from designated State agencies. This program is excluded from coverage under OMB Circular No. A-110.

Award Procedure

Details of the procedure are available from the State and field offices of the Natural Resources Conservation Service.

Deadlines

None.

Range of Approval/Disapproval Time

Receipt of the application is acknowledged as soon as it is determined to be valid.

Appeals

Not applicable.

Renewals

Not applicable.

ASSISTANCE CONSIDERATIONS

Formula and Matching Requirements

Technical and financial assistance under which program funds provide certain prescribed services and costs and a percentage of other costs on the basis of a contract vary according to purpose of the works of improvement. For example, for construction costs under the Act, program funds provide 100 percent for flood prevention; up to 50 percent of agricultural water management, public recreation and fish and wildlife purposes; and none of the costs for certain other nonagricultural water management purposes. All of the applicants' installation costs are eligible for program loans. Reimbursable advances are available for preservation of sites and future municipal water supply.

Length and Time Phasing of Assistance

Continues until all works of improvement are installed or their installation is terminated by mutual agreement.

POST ASSISTANCE REQUIREMENTS

Reports

Annual operation and maintenance inspection and report.

Audits

In accordance with the provisions of 7 CFR Part 3052, "Audits of States, Local Governments, and Non-Profit Organizations," which implement OMB Circular No. A-133 (Revised, June 27, 2003), "Audits of States, Local Governments, and Non-Profit Organizations," nonfederal entities that expend financial assistance of $500,000 or more in Federal awards will have a single or a program-specific audit conducted for that year. Nonfederal entities that expend less than $500,000 a year in Federal awards are exempt from Federal audit requirements for that year, except as noted in 7 CFR 3052.

Records

Records of operation and maintenance activities are maintained for the life of the project.

FINANCIAL INFORMATION

Account Identification

Watershed and flood prevention operations, 12-1072-0-1-301.

Obligations

(Grants watershed and flood prevention operations) FY 04 $63,286,001; FY 05 est $42,482,212; and FY 06 est $0. (Salaries and Expenses, watershed and flood prevention operations) FY 04 $39,482,739; FY 05 est $37,785,604; and FY 06 est $0.

Range and Average of Financial Assistance

(per State) $0 to $2,164,000; $650,000.

PROGRAM ACCOMPLISHMENTS

In fiscal year 2000, 6 projects were approved for operations. A total of 518 projects in construction. Projects installed as planned under the program totaled 918. In fiscal year 2002, it is estimated that 8 projects will be approved for operations, 512 projects will be in construction, and 931 projects will be installed as planned under the program.

REGULATIONS, GUIDELINES, AND LITERATURE

"What is a Watershed," PA-420; "Flood Plain Management - Why We Need It," PA-1276; "Multiple- Purpose Watershed Projects," PA-575; and "Small Watershed Projects," PA- 1354.

INFORMATION CONTACTS

Regional or Local Office

For list of NRCS State offices with telephone numbers and addresses, see Appendix IV of the Catalog.

Headquarters Office

Watersheds and Wetlands Division, Natural Resources Conservation Service, Department of Agriculture, P.O. Box 2890, Washington, DC 20013. Telephone: (202) 720-3534.

Web Site Address

http://www.nrcs.usda.gov

RELATED PROGRAMS

10.664, Cooperative Forestry Assistance; 10.902, Soil and Water Conservation; 10.903, Soil Survey; 10.905, Plant Materials for Conservation; 10.906, Watershed Surveys and Planning; 10.907, Snow Survey and Water Supply Forecasting; 12.104, Flood Plain Management Services.

EXAMPLES OF FUNDED PROJECTS

To date, Federal assistance for installation has been authorized on 1,651 watershed projects. This program provides technical and financial assistance to State agencies and units of local government in solving problems caused by flooding, erosion and sediment damage, conservation, development, utilization, and disposal of water, including the development of multipurpose facilities for such uses as recreation, improvement of fish and wild-life habitat, irrigation, and water supply to municipal and industrial users.

CRITERIA FOR SELECTING PROPOSALS

1) The watershed must meet the requirements of the law; 2) an approved watershed plan has been prepared; 3) the local sponsors should indicate willingness to carry out a watershed project; 4) the project has environmental, economic and social benefits that exceed the costs for a favorable benefit-cost ratio; and 5) no critical environmental issues exist.

York

Division of Bird Habitat Conservation North American Wetlands Conservation Act Grants Program

skip to content
U.S. Standard Grants

Mexican Standard Grants

Canadian Standard Grants

US Small Grants

Council Meeting Highlights

Council Directory

North American Wetlands Conservation Act

Biennial Progress Report
1998-1999
2000-2001

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Back to Home

Purpose

The North American Wetlands Conservation Act (Act) of 1989 provides matching grants to private or public organizations or to individuals who have developed partnerships to carry out wetlands conservation projects in the United States, Canada, and Mexico.

History

The Act was passed, in part, to support activities under the North American Waterfowl Management Plan, an international agreement that provides a strategy for the long-term protection of wetlands and associated uplands needed by waterfowl and other migratory birds in North America. In December 2002, Congress reauthorized appropriations for the Act through Fiscal Year (FY) 2007, reflecting its and the public's support of the Act's goals. Congress increased the appropriation authorization to $55 million in 2003, with $5 million appropriation increases to occur annually until FY 2007, when the appropriation cap will be $75 million.

Funding

In FY 2003, Congress appropriated $38.3 million to fund the grants program. Additional funding comes from moneys received from fines, penalties, and forfeitures under the Migratory Bird Treaty Act of 1918 and from interest accrued on the fund established under the Federal Aid in Wildlife Restoration Act of 1937. Amendments to the Federal Aid in Sport Fish Restoration Act of 1950 directed a portion of the moneys collected from Federal fuel excise taxes on small gasoline engines be allocated for use under the Act for coastal ecosystem projects. The total funding for FY 2003 is $67,607,176.

The North American Wetlands Conservation Council

The Act established the Council to review and recommend project proposals to the Migratory Bird Conservation Commission, which has the authority to approve funding for projects. The Council is comprised of nine members. The Director of the US Fish and Wildlife Service and the Executive Secretary of the National Fish and Wildlife Foundation have permanent seats on the Council. Four state representatives (one from each flyway) and three non-governmental organization representatives (each from a different non-governmental organization that is an active partner in wetlands conservation) are appointed by the Secretary of the Interior. These members serve 3-year terms. Non-voting *ex officio* members are also appointed by the Secretary. There are currently two *ex officio* members representing non-governmental organizations and one each representing Canada and Mexico. The Council meets three times each year.

Accomplishments

Standard Grants Program: From 1991 through September 2003 more than 1,760 partners have been involved in 1,035 Standard Grant Act-supported projects. Canadian and U.S. partners focus on protecting, restoring, and/or enhancing critical habitat. Projects must support long-term wetlands acquisition, restoration, and/or enhancement and partners must minimally match the grant request at a 1-to-1 ratio. Mexican partners may develop training and management programs and conduct studies on sustainable use as well.

More than $573 million has been invested through the Act; total partner contributions have amounted to nearly $1.6 billion. Approximately 20.6 million acres of wetlands and associated uplands have been affected across the continent.

Small Grants Program: Small Grants support the same kinds of activities as Standard Grants but usually involve fewer project dollars. In FY 2003, $2 million was allocated for projects. Except that grant requests may not exceed $50,000 and that funding priority is given to projects that have a grantee or partners that have not participated in an Act-supported project before, criteria for funding a project are the same as for Standard Grants.

From 1996, when the program began, to September 2003, 200 projects, involving more than 580 partners, have been funded. Partners added more than $59.4 million to more than $8.4 million in grants to conserve some 71,135 acres of habitats in the United States.

Contacts

Standard Grants proposals: David Buie (david_buie@fws.gov), (301) 497-5870
Small Grants Program proposals: Keith Morehouse (keith_morehouse@fws.gov), (703) 358-1888.
General office number: (703) 358-1784.

NAWCC

North American Wetlands Conservation Act

United States Standard Grant Proposal

2004 Eligibility Criteria & Processes

INTRODUCTION

This document contains the factors by which a proposal will be determined to be eligible or ineligible for a Standard North American Wetlands Conservation Act (NAWCA) grant, including format for same, and various schedules and processes involved in the submission, review, and approval of a proposal. You need to consult other files on the web site for the 2004 Proposal Instructions (http://birdhabitat.fws.gov/NAWCA/2004ProposalInstructions.pdf) and 2004GrantAdministration Policies and Assistance Award (http://birdhabitat.fws.gov/NAWCA/2004GrantPolicies.pdf).

MAJOR CHANGES FROM 2003

Processes

1. **U.S. Fish and Wildlife Service Assistance Award (grant agreement) will be issued unilaterally, with only the USFWS signature required to activate grant.**

2. **Grant Funds will be disbursed through SMARTLINK, an electronic funds transfer system administered by the U.S. Department of Health and Human Services.**

2004 NAWCA STANDARD GRANT PROPOSAL ELIGIBILITY CRITERIA

Proposals will be returned as ineligible if they do not adhere to the criteria that follow. Additionally, a proposal becomes ineligible if it is substantially changed after it is submitted. A substantial change includes anything that changes answers to the Technical Assessment Questions. However, at any time and for any reason, a proposal may be withdrawn and submitted for the next proposal cycle. We recommend you read the information in all of these files on the NAWCA web site BEFORE you write a proposal.

What is an eligible proposal?

1. A 4-year plan of action supported by a NAWCA grant and partner funds to conserve wetlands and wetlands-dependent fish and wildlife through acquisition (including easements and land title donations), restoration and/or enhancement.
2. Contains a grant request between $51,000 and $1,000,000. If the grant request is $50,000 or less, the proposal will be considered as a NAWCA Small Grant.
3. Contains match that is no more than 2 years old, is non-Federal and at least equals the grant request (referred to as a 1:1 match).
4. Includes new monies and partners to wetlands conservation.
5. May include non-match partners in each section of the proposal except Technical Assessment Questions 1-7B.
6. Contains adequate wetlands-associated uplands to buffer and protect wetlands and to meet the needs of wetland-associated wildlife.
7. Contains consistent dollar and acre figures among all parts of the proposal, Technical Assessment Questions, partner letters and the Standard Form 424. Figures are not rounded in one section and given as actual figures in another section.
8. Has a specifically defined boundary that includes tracts in a geographic area (such as a watershed) affected by grant and partner funds, sites that are part of a wetlands conservation plan, sites in the same wetlands system, sites that are managed to meet the same wetlands objectives, sites that are in close proximity, and/or sites that provide direct benefits to each other.
9. Contains all required sections as described in the 2004ProposalInstructions (http://birdhabitat.fws.gov/NAWCA/2004ProposalInstructions.pdf).
10. Contains work that
    - shows a clear connection between money spent and long-term, on-the-ground wetland benefits,
    - is cost effective (Federal grant funds must be spent in the most cost-effective manner possible),
    - is complementary among match- and grant-funded actions,
    - has been completed within the past 2 years or can be completed in a future 2 years,
    - includes minimal administrative costs and low or no costs associated with personnel who are not directly involved with acquisition, restoration or enhancement of wetlands.
11. Does not contain extra or unsolicited material, such as photographs, pamphlets, engineering plans, business cards, appraisals, general lists of fauna and flora, and letters from supporters who are not partners in the proposal. Such material will NOT be sent to reviewers.
12. If there are multiple sites that aren't specifically identified, the method for selecting sites is given.
13. If an Optional Matching Contributions Plan (see page 3) is submitted or a proposal includes funding from a previously approved Match Plan, only the partner's match applied to the current proposal is shown throughout the Summary and acreage

is shown with or without parentheses, per instructions.

14. Includes signed and dated Partner Contribution Statements that include the same amount of funding listed in the proposal for that partner. Partner Contribution Statements received separate from the proposal or after the deadline are not eligible.
15. Includes a description of (calculations for) how match amounts were calculated.
16. Technical Assessment Questions are answered for the proposal's sites and NOT a larger project area.
17. Includes public access on acquired lands to the extent that it is compatible with long-term conservation of fish and wildlife dependent on the area. It may be appropriate to limit the number of people permitted access or the season of access.
18. If any agreements with landowners will be a part of the proposal, they include clauses to allow costs of property and habitat development to be recouped if the agreement is broken.
19. A proposal becomes ineligible if it is substantially changed after it is submitted. A substantial change includes anything that changes answers to the Technical Assessment Questions. However, at any time and for any reason, a proposal may be withdrawn and submitted for the next proposal cycle.
20. Complies with policies described in 2004 Grant Administration Policiesand Assistance Award (http://birdhabitat.fws.gov/NAWCA/2004GrantPolicies.pdf).
21. Even though a proposal may be part of a multi-year effort and several NAWCA proposals are submitted, each proposal must be submitted separately and compete with other proposals in its cycle.

What is the format for an eligible proposal?

1. Requirements for the Proposal Summary are very specific, since it will be used as a stand-alone document.
    - Start the Proposal Summary on a new page; i.e., do not begin the Proposal Summary on the same page as the Project Officer's page.
    - Do not number Proposal Summary pages.
    - The Proposal Summary, which includes tabular and narrative information, must not exceed two pages.
    - Margins: The Summary is the only part of the proposal that has specific margin requirements. Left margin should be 1 inch and all other margins should be ½ inch.
    - Font size: 11 point.
    - Font typeface: Times New Roman.
    - Information in the Summary table must be exactly the same as provided elsewhere in the proposal.
    - Information in the narrative part of the Summary should be in full sentences.
2. Except for the Summary, there are no margin or font requirements for other sections of the proposal.
3. With the exception of the two-page Summary and one-page Optional Matching Contributions Plan, there are no page number limitations; however, please minimize the proposal size as much as possible. The ultimate size of the whole proposal will depend on the complexity of the proposal, number of tracts, and the number of partners.
4. Even though information in the Summary is in full sentences, information in the rest of the proposal may be given in any manner, including tables, bulleted lists, and narrative paragraphs.
5. Maps may be in color, but all other material should be in black and white.
6. If possible, use recycled paper.
7. Do NOT number the Project Officer's Page or Proposal Summary pages. Begin numbering the proposal pages with the Purpose and Scope section as page 1. It is not necessary to number the Budget Table or Attachments, but it is allowed.
8. The Project Officer's Page and Proposal Summary should be on separate pages, but other sections may be merged (i.e., more than one section may appear on a page).
9. The original proposal should be
    - unbound,
    - printed only on one side of 8.5 x 11 inch paper,
    - printed on the same type of paper (do not include a different weight of paper as a cover), and
    - the only color material should be maps.
10. Proposal copies, including all attachments, should be
    - unbound and
    - two-sided.

Who is an eligible Project Officer and Project Officer responsibilities?

1. The person ultimately responsible for complying with Federal regulations and the policies described in the file 2004 Grant Administration Policies and Assistance Award (http://birdhabitat.fws.gov/NAWCA/2004GrantPolicies.pdf).
2. Seeks approval for any Grant Administration Policies requiring prior approval.
3. Receives all correspondence about a proposal. Note that there can only be one Project Officer. Do not include other contact people.
4. Must be affiliated with the grant recipient's organization.
5. Must be knowledgeable about biological, partnership, and administrative aspects of the proposal.

6. Must be available to provide information
    - immediately after the proposal is submitted (for example, if there are questions about match eligibility),
    - within a few weeks after the proposal is submitted (the Project Officer will be asked to respond to comments and questions about the proposal and provide possible site visit dates), and
    - after the proposal is funded (during implementation of the Assistance Award).

What is an eligible Optional Matching Contributions Plan?

1. May be submitted with a proposal when you have matching funds in addition to what you will use for this proposal and need to maintain the eligibility of this match beyond two years for future proposals. The North American Wetlands Conservation Council (Council) will consider waiving the two-year match eligibility rule based on the circumstances by which the additional match was obtained, your need, and how the match will be utilized.
2. Future proposals must meet all the eligibility factors in place at that time, except for the two-year eligibility factor for the Match Plan portion.
3. May only be submitted with a proposal.
4. May only contain match that meets eligibility requirements (other than match age) when each proposal is submitted.
5. Will only be considered if the accompanying proposal is funded, but may not be approved even if the proposal is funded.
6. Must be applied to future conservation work in the same project area.
7. Must involve match that was obtained in the past two years.
8. Must show use of the match over a period no greater than 5 years.
9. Should only be one page long.
10. Should contain the following sections: Match Plan Amount and Purpose, Match Intent, Match Need, and a Chart.

What is an eligible proposal budget section?

1. Includes a budget table and budget justification section including the required information as explained in the 2004 Proposal Instructions (http://birdhabitat.fws.gov/NAWCA/2004ProposalInstructions.pdf).
2. Numbers in the budget table and justification are calculated correctly and are consistent with other sections of the proposal, such as the Proposal Summary.

What are the rules for eligible costs? Eligible (and ineligible) costs are explained below, first for grant funds and second for match funds.

ELIGIBLE GRANT COSTS

I. Direct and indirect costs for necessary and reasonable goods, services, salaries and labor associated with long-term migratory bird and wetlands conservation work conducted in the periods

- between when the U.S. Fish and Wildlife Service (Service) receives the proposal and the Assistance Award is signed (if the proposal is not approved for funding, the Federal government is under no obligation to pay for any costs you have incurred) and
- after the Assistance Award is signed by the Service (during the project period). In either case, you may not obligate more grant funds than you request in the proposal.

Direct costs can be identified with a specific service or direct activity. Indirect costs are all other costs that have been incurred for common or joint objectives, cannot be readily identified with a particular service or activity, and are calculated using a negotiated indirect cost rate. Indirect costs are eligible if an organization

- has a rate or
- will apply for a rate after the grant agreement is signed by the U.S. Fish and Wildlife Service.

Refer to the circulars cited below for more specific information.

Refer to the following cost principles for Federal grant programs shown below. Applicability of the publication depends on the type of organization that will spend the grant funds. You can also contact the Council Coordinator at dbhc@fws.gov for a paper copy of the publications.

- OMB Circular A-122, "Cost Principles for Non-Profit Organizations", (http://www.whitehouse.gov/OMB/grants/index.html)
- OMB Circular A-87, "Cost Principles for State, Local and Indian Tribal Governments", (http://www.whitehouse.gov/OMB/grants/index.html)
- http://www.whitehouse.gov/OMB/grants/index.html, "Cost Principles for Educational Institutions", (http://www.whitehouse.gov/OMB/grants/index.html)
- 48 CFR 31.2 , "Contracts with Commercial Organizations", (http://www.access.gpo.gov/nara/cfr/index.html)

A. Acquisition. This category includes fee-title acquisition and donation (transfer of title), conservation easement and lease acquisition and donation; appraisal fees; acquisition negotiations; acquisition legal costs; boundary surveys; travel and transportation, and annual payments for 10 year conservation agreements (or the maximum duration allowed by State law).

1. Easement and lease conditions should address the following points. Organizations and agencies are encouraged to adopt and implement the practices and procedures described in the Land Trust Alliance's Land Trust Standards and Practices (available at www.lta.org).

a. Specifically ensure long-term wetlands and associated upland protection;

b. List all restrictions, allowed activities, and reserved rights and clearly demonstrate how those rights will complement long-term wetlands and associated uplands protection;

c. Be legally enforceable by organizations that can demonstrate ability or experience in enforcing easement terms;

d. Be recorded pursuant to state law;

e. Be held by or transferred to a conservation organization (e.g., State or Federal fish and wildlife agency, or non-governmental conservation organization); and

f. Be described in, and models attached to, the NAWCA proposal.

2. A proposal must include the full amount of funding needed to complete acquisition.

3. A Notice of Grant (Cooperative) Agreement or other document able to be recorded will be required for tracts NOT in a long-term conservation-oriented Federal, State or Tribal land management system.

B. Wetland restoration (rehabilitating a degraded or non-functioning wetland ecosystem). This category includes engineering and design costs when combined with design implementation, travel and transportation, material and supply costs, and equipment (including all terrain vehicles) with a current value of $5,000 or more secured by the most cost-effective and feasible method. See the applicable OMB Circular cited above and the following decision tree for equipment valuation.

1. If equipment is rented or leased, use the cost of renting or leasing.

2. If equipment is purchased more than 2 years before the year that the proposal is submitted (i.e., equipment on hand), use either the depreciation or use-allowance method, but not a combination of the 2 methods.

3. If a pump or its power unit is purchased between the date that the proposal is received by the Council Coordinator and the end of the project period, use the full purchase price. If other equipment is purchased, you may use the full purchase price if a justification statement is included in the proposal. Part of the justification statement should include that the equipment will be used solely on the NAWCA project area. If the full price is not allowed, you will be asked to recalculate and use either the depreciation or use-allowance method, but not a combination of the 2 methods.

C. Wetland enhancement (modifying a functioning wetland ecosystem to provide additional long-term wetlands conservation benefits). This category includes the same eligible costs as restoration above, plus nest boxes; habitat islands; and initial land management costs caused by the proposal (e.g., fencing and signing).

D. Established wetlands.

E. Other direct long-term wetlands conservation work [e.g., administering the NAWCA grant agreement; conducting required State and Federal compliance activities (e.g., permits, National Environmental Policy Act compliance, and contaminants surveys); and conducting work that cannot easily be assigned to other activity categories]. The use of grant funds for "administrative" costs is discouraged, but will be reviewed on a case-by-case basis.

F. Indirect costs. Indirect costs are a separate budget category in the proposal.

II. Expenses that meet the following criteria:

A. Verifiable from the grant recipient's and sub-grant recipient's records;

B. Fair market value (in the case of acquisitions, the appraised value);

C. A special expense caused by the proposal (e.g., taxes, except for taxes for which exemptions are available);

III. Work done on sites:

A. that are part of a wetlands conservation plan;

B. in the same wetlands system (e.g., watershed or river basin);

C. that are managed to meet the same wetlands objectives;

D. that are in close proximity; and

E. that provide direct benefits to each other.

IV. The following grant costs/activities are ineligible:

1. actions that will put credits into wetlands mitigation banks;

2. Federal mitigation compliance under the Fish and Wildlife Coordination Act of 1934 or the Water Resources Development Act of 1986. This includes mitigation required by the U.S. Army Corps of Engineers under Section 404 of the Federal Water Pollution Control Act of 1948 or Section 10 of the Rivers and Harbors Act of 1938;

3. work completed prior to submission of the proposal;

4. costs incurred before the U.S. Fish and Wildlife Service receives the grant proposal. The date that costs are incurred is when the following actions occur, irrespective of whether payment is made immediately or in the future:

a. place an order or sign a contract;

b. receive a service;
c. take title to an interest in real property; or
d. exercise an option or enter into a purchase agreement (also called a contract of sale, sales contract, deposit receipt, offer and acceptance, agreement of sale, offer to lease or purchase, or sale agreement) when such action commits you to buy an interest in real property unless you withdraw from the purchase;

5. (unless your approved negotiated indirect cost rate agreement specifically allows it), indirect costs calculated on a base that include:
   a. subgrants (subawards), major subcontracts, any in-kind match provided by a party other than the applicant;
   b. non-match, in-kind match from partners other than the partner with the negotiated indirect cost rate agreement, contributions from Federal agencies and other items that "distort" the cost base;
   c. the purchase price of interests in real property; and
   d. the purchase price of equipment with an acquisition cost of $5,000 or more per unit and a useful life of more than one year (consistent with recipient policy, lower limits may be established);
6. evaluation;
7. stewardship costs;
8. routine expenses (versus new expenses caused by the proposal) required to carry out general responsibilities of the contributor (e.g., utilities);
9. proposal administration salary costs incurred prior to grant execution;
10. proposal planning and development, including investigations to document resource values;
11. conservation education materials or salaries;
12. fundraising;
13. law enforcement;
14. research;
15. the value of existing residences, structures, and buildings unnecessary for wetlands conservation purposes and the cost to construct, remove or repair same;
16. boat ramps, parking lots, roads, and other public access work;
17. observation towers and blinds;
18. routine operations and maintenance salaries and costs;
19. acquisition of tractors and other equipment if it would be more cost effective to rent, lease or use equipment on hand;
20. acquisition of vehicles (note that all terrain vehicles are considered equipment if the acquisition cost is more than $5,000 per unit);
21. loss of income (e.g., lost grazing revenue);
22. interest;
23. contingencies;
24. non-proposal specific communications products;
25. travel for Federal employees;
26. an easement that is subordinate to a mortgage or lien;
27. costs over the appraised value for fee-title and easement acquisitions; or
28. short-term annual conservation activities, such as annual predator management.

ELIGIBLE MATCH COSTS

All items listed above under Eligible Grant plus the following:

I. Must at least equal the grant request.
II. Must be non-Federal. Even if funds pass through a non-Federal entity, they retain their Federal nature.
III. Must be documented by the following
   A. signed and dated Partner (including non-matching) Contribution Statements sent with the proposal and
   B. a copy of any easements or leases in place at the time the proposal is submitted.
IV. Must be or have been contributed
   A. no earlier than 2 years prior to the year the proposal is submitted (funds applied for, but not yet approved, by the NAWCA proposal due date are not eligible) unless match is covered by a Council-approved Matching Contributions Plan);
   B. between the time when the Service receives the proposal and the Assistance Award is signed; or
   C. during the project period after the Assistance Award is signed. If the contribution extends past the 2-year grant period (e.g., payments for a 10-year lease), the amount of match must be committed via a dedicated account, bank letter of credit, or other instrument for the full amount of time (e.g., 10 years).
V. May have as its source the Indian Self-Determination and Educational Assistance Act, P.L. 93-638, of 1975.

VI. Must be permanent, non-reimbursable, dedicated to a project proposal, and committed by the proposal due date. For example, future fundraising efforts or grant applications are only eligible if the partner organization agrees to provide the full funding amount even if the fundraising effort or grant application is unsuccessful.

VII. May include monitoring and evaluation costs, if results will be used to improve wetlands conservation and future NAWCA proposals.

VIII. May be donated title to real property where the donation increases resource values of the proposal or protection or management of wetlands and migratory bird values.

IX. If equipment is loaned, use the fair rental value to determine value.

X. May be stewardship costs, if the funds are in an account dedicated solely to the NAWCA proposal.

XI. May be Department of the Interior (DOI) Natural Resource Damage Assessment and Restoration (NRDAR) Fund (Fund) monies

A. if wetlands mitigation is not part of the NRDAR-funded work,

B. if the work significantly contributes to the wetlands protection objectives of the proposal,

C. if the monies have been or will be deposited pursuant to a joint and indivisible recovery by the DOI and non-Federal trustees under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Oil Pollution Act (OPA),

D. if the monies were or will be transferred to a non-Federal trustee who has joint and binding control over the funds (the non-Federal trustee may transfer it to another entity, but that could affect whether it's an eligible match based on such considerations as did the trustee's transfer of the money comply with the trustee's own laws and regulations regarding any state or tribal grant, cooperative agreement, or contracting statute or regulations),

E. if the co-trustees agree that monies from the Fund should be made available to the non-Federal trustee and allowed to be proffered as a non-Federal match to accomplish an appropriate project consistent with the settlement agreement and the provisions of CERCLA and OPA, and

F. if the factors above are addressed in a letter submitted with the proposal from the non-Federal trustee.

XII. May be Congressionally appropriated funds if legislative language specifically characterizes the appropriated funds as "non-federal" for certain designated purposes that would include NAWCA objectives. The grant applicant should provide ample evidence in the proposal regarding the non-federal nature of the match. For example, P.L. 103-434, the Pacific Northwest Electric Power Planning and Conservation Act, provides an exception that allows Bonneville Power Administration rate payer funds to be used as non-federal for purposes of matching Federal dollars to fund projects that promote conservation of wildlife and fisheries resources, including wetlands, while improving water quality and availability.

XIII. May be cost over-runs from previous phases of the same project, if the contributions meets all other eligibility requirements.

XIV. **The following match costs/activities are ineligible:**

A. funds that have been successfully used to match another Federal grant. Some U.S. Fish and Wildlife Service grant programs include Federal Aid to States grants; Coastal Wetlands Planning, Protection, and Restoration Act grants; Endangered Species Act grants; and Partners for Fish and Wildlife (private lands) grants.

B. Exxon Valdez Oil Spill (EVOS) funds

C. Work completed prior to submission of the proposal

D. Costs incurred before the U.S. Fish and Wildlife Service receives the grant proposal.

2004 NAWCA STANDARD GRANT PROPOSAL PROCESSES

What are the 2004 proposal deadlines? Due dates for receipt of the complete proposal, including all copies, are **March 5 and July 30, 2004**. Any group or individual may submit proposals at any time. Proposals received after the March deadline will be processed, but will not be considered for funding until the second Council meeting after which they are submitted. Proposals received after the July deadline will be returned unless the proposal is clearly labeled as an early 2005 submission (these will be subject to modifications depending on any changes in the submission guidelines that occur for 2005). Complete proposals must be received by (versus postmarked by) 4 pm Eastern Standard Time March 5 and July 30, 2004. We suggest that you mail your proposal with adequate lead-time and do not rely on meeting the proposal deadline at the last minute through mail delivery companies. Deadlines WILL CHANGE each year, so consult this web site annually for current deadline information.

When and why should I contact a North American Waterfowl Management Plan Joint Venture Coordinator? You need to contact a Joint Venture Coordinator North American Waterfowl Management Plan Joint Venture Coordinators (http://birdhabitat.fws.gov/NAWMP/jvdir.htm) very early in the proposal development process, since they can answer many questions about the NAWCA grants program, provide advice to you regarding what should and should not go into proposals, and let you know what (and when) additional information will be required for proposal compliance reviews (National Environmental Policy Act, Endangered Species Act, National Historic Preservation Act, contaminants) by the U. S. Fish and Wildlife Service (Service). Also, since the Joint Ventures rank all proposals for the Council, the Coordinators need to know the proposal areas and their resource values.

How do I know what laws and regulations I will need to comply with if I get a NAWCA grant? You need to read the files on the NAWCA web site, talk to a Joint Venture Coordinator and, if you still have questions, contact the Council Coordinator. The 2004 Grant Administration Policies and Assistance Award (http://birdhabitat.fws.gov/NAWCA/2004 GrantPolicies.pdf) contains stipulations applicable to NAWCA grant and match funds and activities in a proposal and the file also contains the one-page Assistance Award. If you have questions about whether you can comply with any stipulations in any of these documents, please contact the Council Coordinator at dbhc@fws.gov or 703-358-1784 before you submit a proposal.

How do I download files and fill in the blanks to complete a proposal? To aid you in completing a proposal, blank proposal outlines and tables may be downloaded from

1. Word Proposal Outline (http://birdhabitat.fws.gov/NAWCA/2004WordProposalOutline.doc),
2. Word Perfect Proposal Outline (http://birdhabitat.fws.gov/NAWCA/2004WordPerfectProposalOutline.wpd), and
3. Excel Budget Table (http://birdhabitat.fws.gov/NAWCA/2004ExcelBudgetTable.xls).

These files do not contain any instructions or examples, so you should use them in conjunction with the instructions in the 2004 Proposal Instructions (http://birdhabitat.fws.gov/NAWCA/2004ProposalInstructions.pdf) when you are completing one of the blank proposals. Additional eligibility criteria about a proposal are given in the first section of this file.

How many copies of the proposal do I prepare?

1. One unbound (a binder clip is allowed), one-sided original proposal and attachments. Do NOT include easements, leases or the Indirect Cost Rate Agreement.
2. Two unbound, 2-sided copies of the proposal and attachments. Do NOT include easements, leases, or the Indirect Cost Rate Agreement.
3. One unbound, 2-sided copy of easements, leases and the Indirect Cost Rate Agreement, as applicable.
4. One copy of the proposal, the Budget Table, and the Tract Table to be sent electronically.

Where and how do I send the proposal?

1. Do not send the proposal by facsimile machine.
2. Mail the proposal (1-3 above) to the Council Coordinator at the address below, your North American Waterfowl Management Plan Joint Venture Coordinator (http://birdhabitat.fws.gov/NAWMP/jvdir.htm), and proposal partners (as you deem appropriate).

   Coordinator, North American Wetlands Conservation Council
   U. S. Fish and Wildlife Service
   Division of Bird Habitat Conservation
   Attn: David Buie
   Mail Stop MBSP - 4075
   4401 North Fairfax Drive
   Arlington, VA 22203

3. Attach a copy of the proposal, Budget Table, and Tract Table to an e-mail message sent to dbhc@fws.gov.

If there is a change in the proposal, should I modify it and resend? No. Unsolicited modified proposals will be considered a new proposal for the next proposal round. Before you submit the proposal, make sure you can positively respond to the criteria at the beginning of this file. Also make sure you can achieve acres and match as described in the proposal. Unless there are substantial and prudent reasons to modify performance expectations, failure to achieve acres and match as described in the proposal may result in a reduced grant amount.

Proposals that are submitted in March and are not selected at the July Council meeting will automatically carry over to the December meeting and will be considered along with new proposals submitted in July. However, if there are significant changes in partnerships or scope of work to non-selected March proposals, you may withdraw the March proposal and submit a new proposal package (original proposal and all required copies). If a proposal is not selected by the next March Council meeting, it will be returned to you. You may revise and resubmit for the next cycle, if you desire.

Will I get comments on the proposal? When will I know if a site visit is needed? We communicate with the Project Officer after we have initially reviewed the proposal (we send you comments and request possible site visit dates), 2) the proposal has been scored and site visits, if needed, are scheduled, and 3) each Council and Migratory Bird Conservation Commission (MBCC) meeting. The Project Officer must be available to respond to questions about the proposal.

When will I know if the Council has selected the proposal? The Council (http://birdhabitat.fws.gov/NAWCA/grants.htm#nawcc) usually meets in March, July, and December to select proposals to recommend to the MBCC who approves proposals for funding. Proposals submitted in March are eligible for consideration at the July, December, and March Council meetings and proposals submitted in July are eligible for the December and March Council meetings. However, in many years, funds for U.S. Standard Grant proposals are depleted after the December Council meeting, therefore usually no U.S. Standard Grant proposals are selected at the March Council meeting. The Council selects a slate of proposals based on Technical Assessment Question scores, North American Waterfowl Management Plan Joint Venture ranks, Council goals and objectives, available funding, site visits, and other factors. Council meetings are open to the public, but are not interactive sessions. After each Council meeting, you will be given the results regarding your proposal (and Optional Matching Contributions Plan if applicable).

What do I need to do after the Council selects the proposal? Hopefully you have already contacted your North American Waterfowl Management Plan Joint Venture Coordinator (http://birdhabitat.fws.gov/NAWMP/jvdir.htm) so you know if there is any additional information that the Service needs from you to conduct compliance reviews. There are only a few months between the Council and MBCC meetings, so you should be prepared to provide additional information, if needed, quickly. The proposal will not be presented to the MBCC for final funding approval unless the Service can ensure it complies with the National Environmental Policy Act. The grant agreement cannot be signed until the Service can ensure the proposal complies with the National Historic Preservation Act and with Service contaminants survey requirements (if applicable).

When will I know if the proposal has been approved for funding? The MBCC (http://realty.fws.gov/mbcc.html) meets in March, June, and September to give final funding approval to NAWCA proposals. March proposals may be presented to the MBCC the following September, March or June and July proposals may be presented to the MBCC the following March or June. After each MBCC meeting, you will be given the results and an Assistance Award and electronic funds transfer form will be sent to you. Additionally, Project Officer and proposal summary information will be posted on the NAWCA web site. Please share the approval news with elected officials and the general public via a news release and send us a copy.

When will I get the grant funds? The Assistance Award (also referred to as the grant agreement) is shown in the file 2004 Grant Administration Policies and Assistance Award (http://birdhabitat.fws.gov/NAWCA/2004GrantPolicies.pdf), that incorporates the proposal by reference, is developed by the Service after the MBCC has approved funding for the proposal. A Division of Bird Habitat Grants Officer will review the proposal and assemble the pertinent documents. If the grants officer finds any problem related to compliance with law, policy, or administrative procedures, s/he will contact the project officer to seek a resolution. If there are no problems, or once problems have been resolved, the grants officer will send the recipient a signed Agreement. The grant becomes active, and the funding period begins 14 after the date of the USFWS signature on the Agreement. Recipient signature is not required. Recipient signature is not required, although the grantee may respond to DBHC with questions and/or comments during the 14 day initial period.

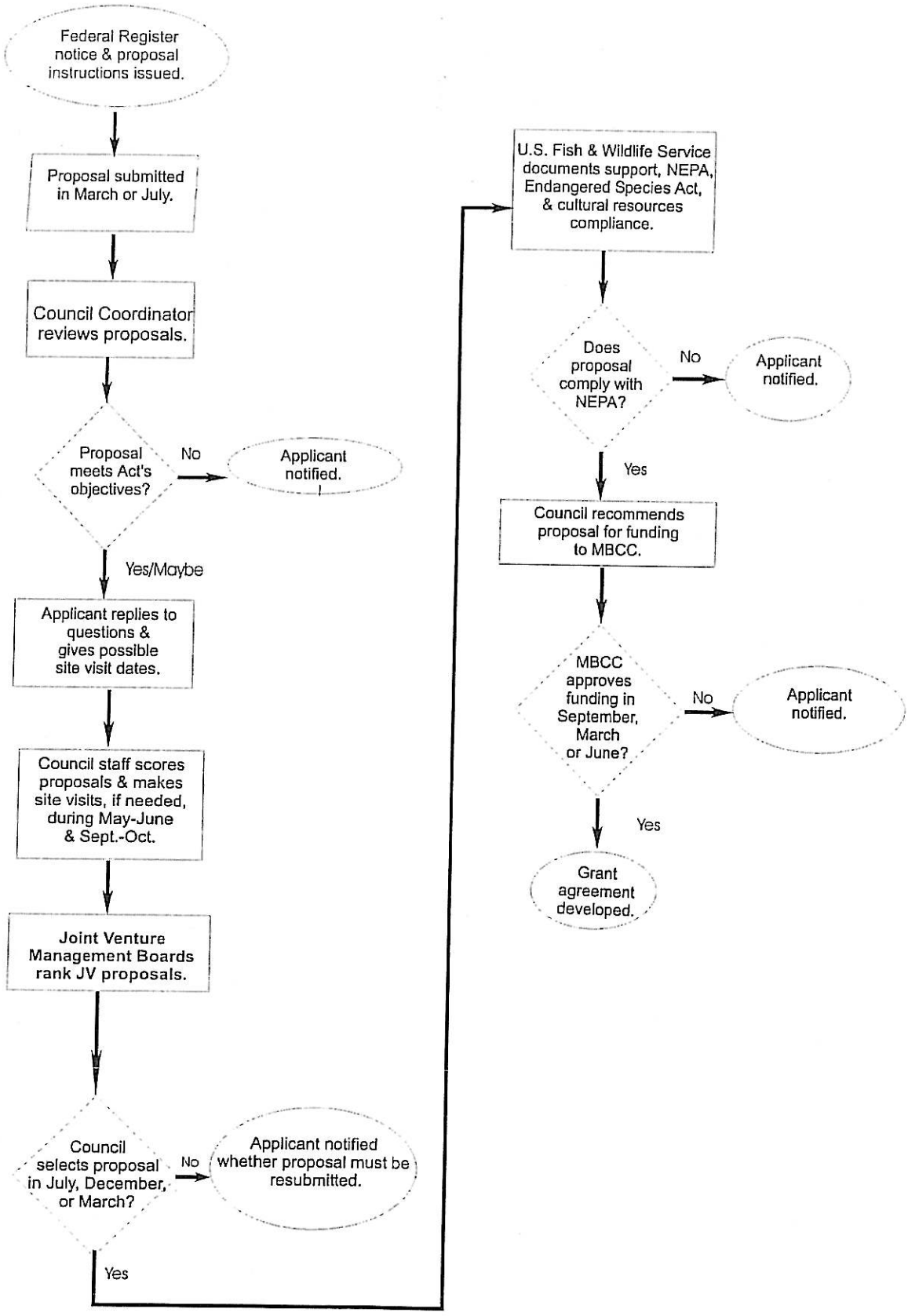
Remember that you will be expected to conduct work, and meet acreage objectives, described in the proposal. At this point, some grant funds may be available, but annually appropriated funds are not available until the beginning of the Federal fiscal year, October 1. Grant funds are "no-year dollars" and, therefore, do not have to be spent within a Federal fiscal year, but do need to be spent within the 2-year period of performance.

The table and diagram below show the processes described above.

PROPOSAL IS SUBMITTED IN ...	IT MAYBE CONSIDERED BY COUNCIL IN ...	AND MAY BE APPROVED FOR FUNDING BY MBCC IN ...
March 2004	July 2004	September 2004
	December 2004	March 2005
	March 2005	June 2005
July 2004	December 2004	March 2005
	March 2005	June 2005

How will I receive grant funds? The recipient's financial institution must be able to receive funds through the electronic funds transfer process and be able to request advance payment and reimbursement through SMARTLINK, an electronic funds transfer system that is administered by the U.S. Department of Health and Human Services Division of Payment Management (DPM) . (http://dpmlink.dpm.psc.gov/Funding.aspx). . Should your proposal be awarded you will be instructed to set up a SMARTLINK account , as explained on our website http://birdhabitat.fws.gov/smartlink/SMARTLINK.htm

NAWCA PROCESS DIAGRAM



CFDA
The Catalog of Federal Domestic Assistance

97.045 COOPERATING TECHNICAL PARTNERS

(CTP)

FEDERAL AGENCY
DEPARTMENT OF HOMELAND SECURITY

AUTHORIZATION
Housing and Urban Development Act of 1968, also known as National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4101; the Housing and Urban Development Act of 1969; the Flood Disaster Protection Act of 1973, as amended; and National Flood Insurance Reform Act of 1994.

OBJECTIVES
To increase local involvement in, and ownership of, the development and maintenance of flood hazard maps produced for the National Flood Insurance Program (NFIP).

TYPES OF ASSISTANCE
Project Grants (Cooperative Agreements).

USES AND USE RESTRICTIONS
The funds are authorized to supplement, not supplant, ongoing flood hazard mapping efforts by the community, regional agency, or State agency.

ELIGIBILITY REQUIREMENTS

Applicant Eligibility
All States and Commonwealths (including the District of Columbia and territories and possessions of the United States), regional agencies, and communities may apply. All applicants must be communities participating and in good standing in the NFIP or service participating NFIP communities.

Beneficiary Eligibility
Funding under this program is ultimately used by emergency management, land-use planning, permitting, lending and insurance organizations, and programs of States, the District of Columbia, territories and possessions of the United States, and local governments.

Credentials/Documentation

Successful applicants are expected to submit a Mapping Activity Statement, Application for Federal Assistance (SF424, etc.), Assurances, and Certifications. The Mapping Activity Statement must provide a brief description of the proposed activity to support the production and/or maintenance of flood hazard mapping.

APPLICATION AND AWARD PROCESS

Preapplication Coordination

An applicant should consult the FEMA Regional Office for application information and technical assistance. This program is excluded from coverage under E.O. 12372.

Application Procedure

All eligible applicants are provided guidance on the Cooperating Technical Partners (CTP) program, including instructions for managing the Cooperative Agreement. The instructions are fully consistent with all applicable Office of Management and Budget circulars and the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments (the Common Rule) which FEMA has implemented as 44 CFR 13.

Award Procedure

FEMA Regional Directors make final decisions to approve Cooperative Agreements to the State agencies, regional agencies, or communities, and notify the applicants of their awards.

Deadlines

All eligible applicants are notified of target dates and any applicable deadlines by way of the CTP guidance package.

Range of Approval/Disapproval Time

Within 60 days of receipt of formal application, unless otherwise specified by FEMA in writing.

Appeals

None.

Renewals

None.

ASSISTANCE CONSIDERATIONS

Formula and Matching Requirements

There are no matching requirements; however, applicants must be technically capable of providing products or services that add value to the flood hazard mapping process.

Length and Time Phasing of Assistance

The performance period for grants/assistance is from 12 to 24 months.

POST ASSISTANCE REQUIREMENTS

Reports

Performance and financial reports are due 30 days after the end of each quarter (i.e., January 30, April 30, July 30, October 30). The final performance report is due 90 days after the expiration or termination of grant support if there is a change to the October financial report. The final financial report is due 90 days after the expiration or termination of grant support.

Audits

In accordance with the provisions of the Office of Management and Budget (OMB) Circular No. A-133 (Revised, June 27, 2003), "A), "Audits of States, Local Governments, and Non-Profit Organizations," nonfederal entities that expend financial assistance of $500,000 or more in Federal awards will have a single or a program-specific audit conducted for the year. Nonfederal entities that expend less than $500,000 a year in Federal awards are exempt from Federal audit requirements for that year, except as noted in OMB Circular No. A-133.

Records

Records and accounts are to be retained, generally for 3 years as prescribed by OMB Circular Nos. A-102 and No. A-110.

FINANCIAL INFORMATION

Account Identification

70-5464-0-2-453.

Obligations

(Cooperative Agreements) FY 05 $40,000,000; FY 06 est $59,000,000; and FY 07 est $59,000,000.

Range and Average of Financial Assistance

Agreements have ranged from $35,000 to $6 million depending on the size and complexity of the proposed mapping project.

PROGRAM ACCOMPLISHMENTS

As of April 13, 2004, 173 communities, regional agencies, and State agencies had signed Partnership Agreements with FEMA and are, therefore, active participants in the CTP program. Approximately 63 percent of these participants have already undertaken specific mapping activities under Mapping Activity Statements. Up-to-date information on the specific mapping activities undertaken by each participant is available on the FEMA website at http://www.fema.gov/mit/tsd/ctp_news.htm.

REGULATIONS, GUIDELINES, AND LITERATURE

Annual program guidance is available to all CTP initiative participants and the general public on the FEMA website at www.fema.gov/mit/tsd/ctp_main.htm.

INFORMATION CONTACTS

Regional or Local Office

FEMA Regional Offices will manage all program activities under the CTP initiative. See Appendix IV of the Catalog for a listing of FEMA Regional Offices.

Headquarters Office

Department of Homeland Security, Federal Emergency Management Agency (FEMA), c/o 245 Murray Lane - Bldg. #410, Washington, DC 20523, Phone: 800-621-FEMA (3363).

Web Site Address

http://www.dhs.gov

RELATED PROGRAMS

97.022, Flood Insurance.

EXAMPLES OF FUNDED PROJECTS

Examples of funded projects include: (1) Refinement of Approximate Zone A Boundaries; (2) Hydrologic and Hydraulic Modeling and Floodplain Mapping; (3) Digital Flood Insurance Rate Map Preparation; (4) Redelineation of Detailed Flood Hazard Information Using Updated Topographic Data.

CRITERIA FOR SELECTING PROPOSALS

Applicants must have existence of processes or systems in place that support mapping or data collection activities that contribute to flood hazard identification; demonstrate the capability and commitment to perform the mapping activities for which it is applying; be a community participant, in good standing, of the NFIP; able to perform the financial management activities required as part of the agreement; and have in-house staff capabilities in the appropriate technical area for the mapping activities it will be responsible for, and/or assurance that work performed by contractors will meet the requirements of 44 CFR Part 13.