

## BROAD COVE TRAFFIC SAFETY COMMITTEE

1. Neighborhood Map
2. Initiatives: Broad Cove Traffic Safety Committee
  - Traffic Sign Summary Report
  - Police Record for Speeding Within Neighborhood
  - Neighborhood Survey
3. History of Traffic Safety within Broad Cove Neighborhood
  - Jordan Farm Road
    - o Town Council Minutes – 11/13/00
    - o Speed Enforcement Article: Cape Elizabeth News – 11/16/00
  - Highlands at Broad Cove
    - o Traffic Impact Study – 11/85
    - o Michael K. McGovern – Memo – 6/15/89
    - o Linda Kokemuller (DEP) – Technical Services Review Memo – 3/13/90
    - o Squaw Bay Corp Consulting Engineers Ltr to MDEP – 6/26/90
    - o T.Y.Lin (Robert Hunter) Ltr to Town of Cape Elizabeth – 8/8/90
    - o Town of Cape Elizabeth Ltr to MDEP – 12/13/90
4. Town Documents
  - Appendix B – Zoning Ordinance
  - Traffic Calming Policy





## Extended Speed Summary Report

Generated by Neil Williams from Yarmouth Police Department  
on May 31, 2016 at 12:53:05 PM  
Site: Broad Cove Road, NB

Time of Day: 0:00 to 23:59  
Dates: 5/17/2016 to 5/23/2016

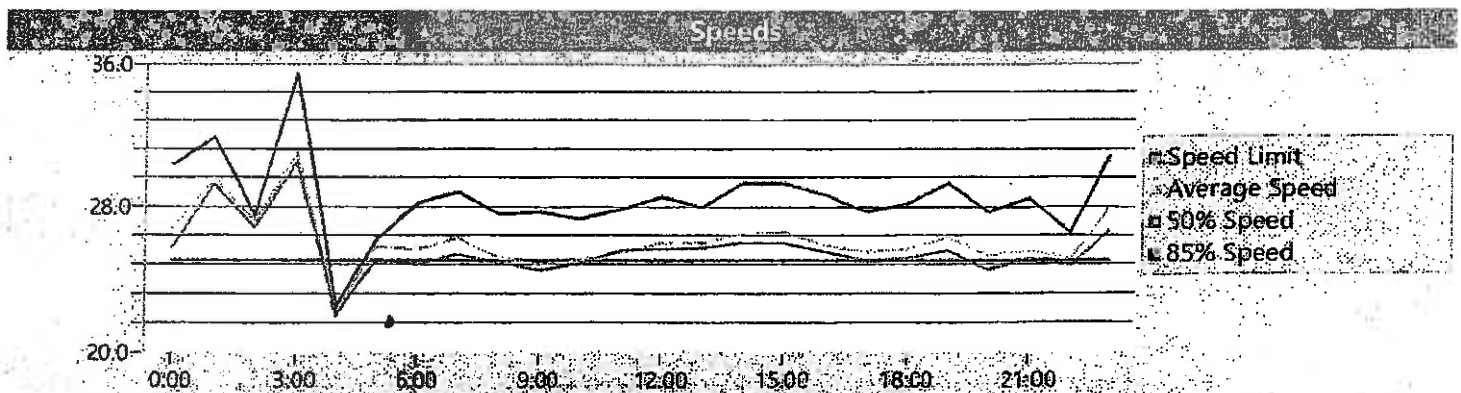
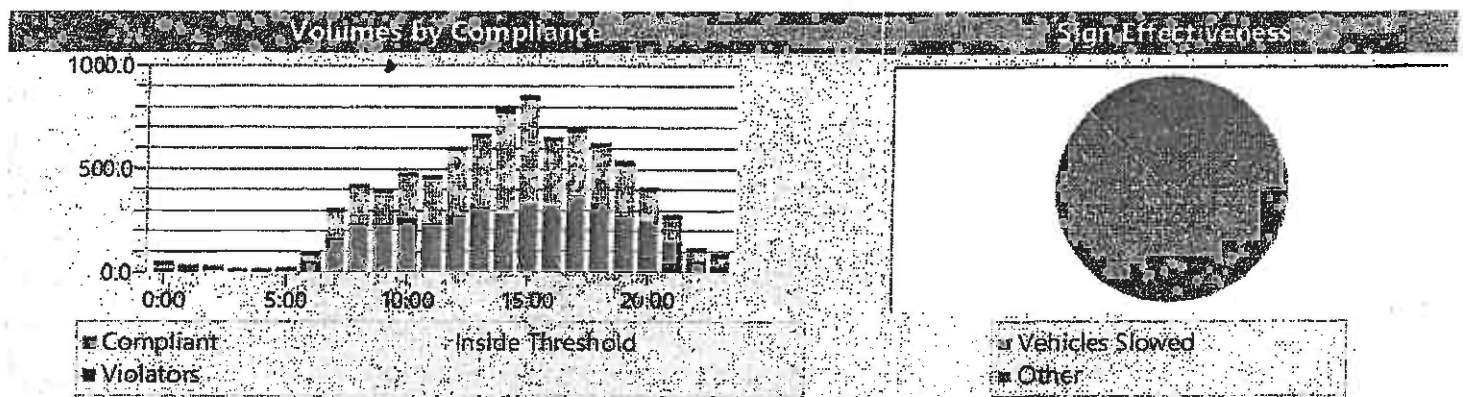
*A sign of the future.*

### Overall Summary

Total Days of Data: 7  
Speed Limit: 25  
Average Speed: 26.12  
50th Percentile Speed: 25.62  
85th Percentile Speed: 28.48  
Pace Speed Range: 21 to 31

Minimum Speed: 20  
Maximum Speed: 51  
Display Status: Displayed Vehicle Speeds  
Average Volume per Day: 1213.7  
Total Volume: 8496

*comparison?*




*A sign of the future™*

# Extended Speed Summary Report

Generated by Neil Williams from Yarmouth Police Department

on May 31, 2016 at 12:53:26 PM

Site: Broad Cove Road, NB

Time of Day: 0:00 to 23:59

Dates: 5/17/2016 to 5/23/2016

Hours	Sign Mode	Speed Limit	Total # Vehicles	Total # Violations	% Violations	Avg # Vehicles	Avg # Violations	Minimum Speed Recorded	Maximum Speed Recorded	Avg Spd	50% Spd	85% Spd	Sign Effectiveness
0:00	Speed	25	47.0	5.0	10.6 %	6.7	0.7	20.0	38.0	26.7	25.7	30.3	43.4 %
1:00	Speed	25	29.0	6.0	20.7 %	4.8	1.0	21.0	51.0	29.4	29.2	31.9	38.1 %
2:00	Speed	25	14.0	0.0	0.0 %	2.3	0.0	22.0	30.0	27.2	26.8	27.5	54.2 %
3:00	Speed	25	9.0	4.0	44.4 %	4.5	2.0	24.0	46.0	31.0	30.5	35.5	7.0 %
4:00	Speed	25	5.0	0.0	0.0 %	1.3	0.0	20.0	27.0	22.3	22.0	22.5	12.5 %
5:00	Speed	25	10.0	0.0	0.0 %	2.0	0.0	20.0	30.0	25.8	25.0	26.2	30.0 %
6:00	Speed	25	92.0	3.0	3.3 %	15.3	0.5	20.0	38.0	25.7	24.8	28.2	35.0 %
7:00	Speed	25	303.0	6.0	2.0 %	43.3	0.9	20.0	41.0	26.2	25.4	28.8	33.8 %
8:00	Speed	25	415.0	1.0	0.2 %	59.3	0.1	20.0	43.0	25.1	24.9	27.6	40.6 %
9:00	Speed	25	336.0	0.0	0.0 %	64.3	0.0	20.0	33.0	24.8	24.5	27.7	37.5 %
10:00	Speed	25	467.0	0.0	0.0 %	77.8	0.0	20.0	33.0	25.0	24.8	27.3	38.9 %
11:00	Speed	25	457.0	2.0	0.4 %	76.2	0.3	20.0	40.0	25.4	25.6	27.9	38.9 %
12:00	Speed	25	599.0	7.0	1.2 %	99.8	1.2	20.0	41.0	26.0	25.7	28.5	39.7 %
13:00	Speed	25	667.0	9.0	1.3 %	95.3	1.3	20.0	46.0	26.0	25.7	27.9	44.4 %
14:00	Speed	25	797.0	21.0	2.6 %	113.9	3.0	20.0	42.0	26.4	26.0	29.3	43.6 %
15:00	Speed	25	852.0	11.0	1.3 %	121.7	1.6	20.0	40.0	26.6	26.0	29.3	40.6 %
16:00	Speed	25	644.0	2.0	0.3 %	107.3	0.3	20.0	36.0	25.8	25.5	28.7	46.4 %
17:00	Speed	25	690.0	8.0	1.2 %	115.0	1.3	20.0	43.0	25.5	25.0	27.7	45.0 %
18:00	Speed	25	614.0	5.0	0.8 %	102.3	0.8	20.0	40.0	25.7	25.2	28.2	43.5 %
19:00	Speed	25	531.0	7.0	1.3 %	88.5	1.2	20.0	45.0	26.3	25.5	29.3	36.1 %
20:00	Speed	25	408.0	7.0	1.7 %	68.0	1.2	20.0	46.0	25.3	24.5	27.7	44.0 %
21:00	Speed	25	272.0	5.0	1.8 %	45.3	0.8	20.0	42.0	25.6	25.1	28.4	35.1 %
22:00	Speed	25	109.0	1.0	0.9 %	18.2	0.2	20.0	41.0	25.1	24.7	26.5	49.8 %
23:00	Speed	25	79.0	6.0	7.6 %	13.2	1.0	20.0	48.0	28.0	26.7	30.8	29.0 %
Total	Speed	25	8496.0	116.0	4.3 %	1346.4	19.4	20.0	51.0	26.1	25.6	28.5	37.8 %

CAPE ELIZABETH POLICE DEPARTMENT WARNINGS AND VIOLATIONS ISSUED  
WITHIN BROAD COVE NEIGHBORHOOD

JANUARY 01, 2011 – JANUARY 01, 2016

SUMMARY

➤ SPEED VIOLATIONS

- 6 violations over a six year period
- Roughly 1 violation per year
- Average speed per violation: 39 mph

➤ SPEED WARNINGS

- 17 warnings over a six year period
- Less than 3 warnings per year
- Average speed per warning: 35 mph and below

**CAPE ELIZABETH POLICE DEPT WARNINGS AND DEFECT  
CARDS ISSUED ON BROAD COVE RD BETWEEN 1-1-2011  
AND 1-1-2016**

1-15-11	STICKER
2-9-11	BRAKE LIGHT
2-24-11	HEADLIGHT
2-24-11	STICKER
3-2-11	EXP REG
3-10-11	STICKER
4-7-11	EXP REG
4-7-11	EXP REG
4-23-11	SPEED
5-7-11	STICKER
6-5-11	TAILLIGHT
6-16-11	EXP REG
6-30-11	SPEED
7-1-11	SPEED
7-2-11	SPEED
7-2-11	SPEED
8-26-11	SPEED
9-21-11	BRAKE LIGHT
10-21-11	REAR LIGHTS
11-26-11	HEADLIGHT
3-2-12	SPEED
3-13-12	EXP REG
6-16-12	REAR LIGHTS
10-3-12	SPEED
10-4-12	SPEED
10-4-12	SPEED
10-5-12	FAIL TO PROD LIC
10-22-12	TAILLIGHTS

10-25-12	EXP REG
3-15-13	STOPSIGN
7-26-13	FAIL TO DIM HEADLIGHTS
7-26-13	FAIL TO CH ADD ON LIC
9-9-13	SEATBELT
9-23-13	STOPSIGN
9-25-13	SPEED
9-27-13	SPEED
10-29-13	STICKER
11-21-13	STICKER
2-22-14	BRAKE LIGHT
4-10-14	FAIL TO PROD LIC
5-21-14	SPEED
6-3-14	SPEED
8-3-14	SPEED
5-20-15	STOPSIGN
5-27-15	SPEED
8-25-15	SPEED

# Summons & Citations

USAC

VSAC 3060555

UTT#

DATE 8-25-2015

OFFICER GAUDETTE

DOCKET #

CHARGE SPEED 34 / 25 \$119

DISPOSITION 1-5-2016 1300

AGE 17 - FEMALE

TIME 1615

LOCATION BROAD COVE RD CE RESD

COMP CASE

SENT DATE 8-27-2015

COURT DATE

☐ Adult ☒ JV

# Summons & Citations

USAC

VSAC 3060546

UTT#

DATE 4-10-2015

OFFICER GAUDETTE

DOCKET #

CHARGE SPEED 40 / 25 \$185

DISPOSITION

AGE 16

TIME 2135

LOCATION BROAD COVE

COMP CASE

SENT DATE 4-15-2015

COURT DATE

☐ Adult ☒ JV

# Summons & Citations

USAC

VSAC 2948101

UTT#

DATE 9-27-2013

OFFICER KENNEDY

DOCKET #

CHARGE SPEED 46 / 25 \$215

DISPOSITION

AGE 17-MALE

TIME 1410

LOCATION BROAD COVE RD CE-RESID

COMP CASE UNREGISTERED MV \$70

SENT DATE 10-2-2013

COURT DATE

☐ Adult ☒ JV

# Summons & Citations

USAC

VSAC 2808720

UTT#

DATE 10-5-2012

OFFICER KENNEDY

DOCKET #

CHARGE SPEED 39 / 25 \$119

DISPOSITION

AGE 60

TIME 1338

LOCATION BROAD COVE RD

COMP CASE

SENT DATE 10-10-2012

COURT DATE

☒ Adult ☐ JV

# Summons & Citations

USAC

VSAC 2808734

UTT#

DATE 9-27-2012

OFFICER WEBSTER

DOCKET #

CHARGE SPEEDING 35 / 25 \$137

DISPOSITION

AGE 78

TIME 1530

LOCATION BROAD COVE RD

COMP CASE

SENT DATE 10-3-2012

COURT DATE

☒ Adult ☐ JV

# Summons & Citations

USAC

VSAC 2704282

UTT#

DATE 5-5-2011

OFFICER KENNEDY

DOCKET #

CHARGE SPEEDING 39 / 25 \$137

DISPOSITION

AGE 40

TIME 0925

LOCATION BROAD COVE RD

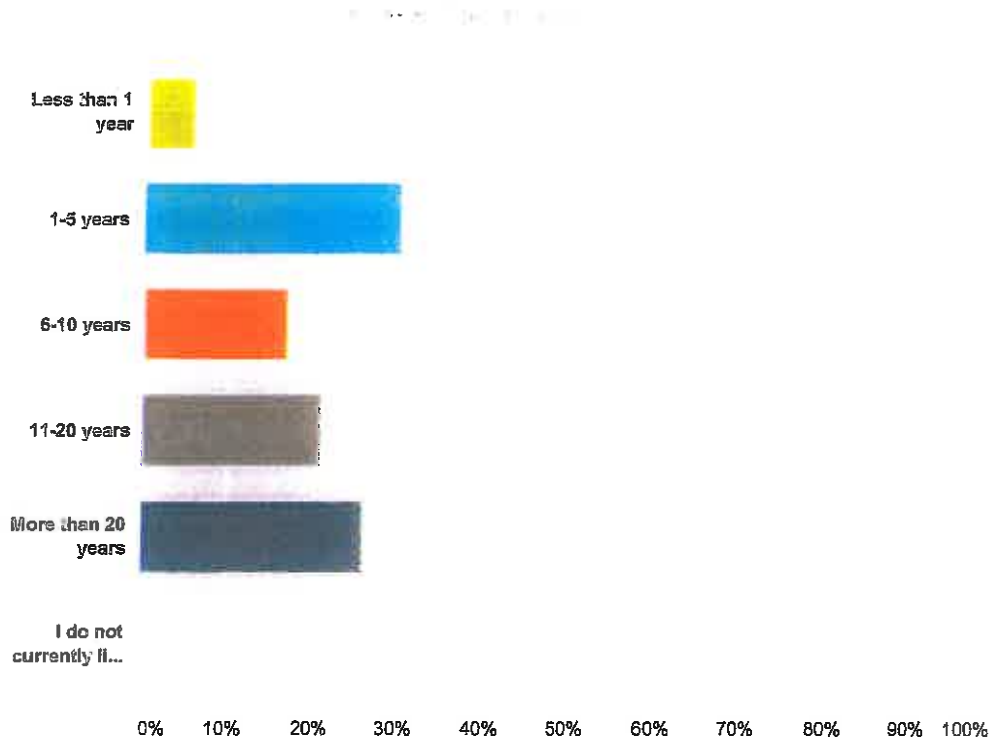
COMP CASE

SENT DATE 5-10-2011

COURT DATE

☒ Adult ☐ JV

**Q1 How long have you been a resident of the Broad Cove neighborhood?**



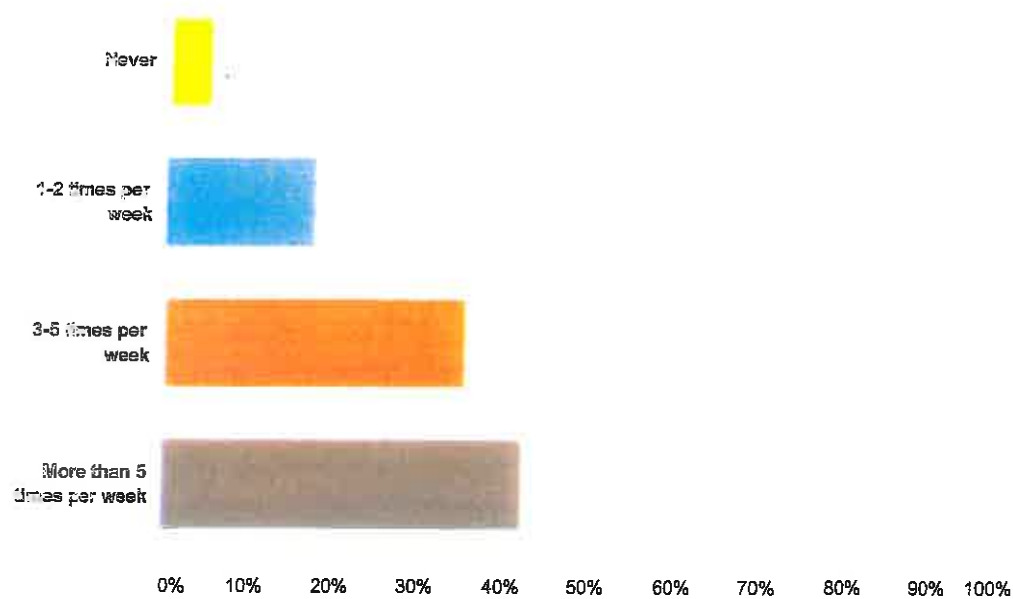
**Answer Choices**

**Responses**

Less than 1 year	5.63%	8
1-5 years	30.28%	13
6-10 years	16.90%	24
11-20 years	21.13%	30
More than 20 years	26.06%	37
I do not currently live in Broad Cove	0.00%	0

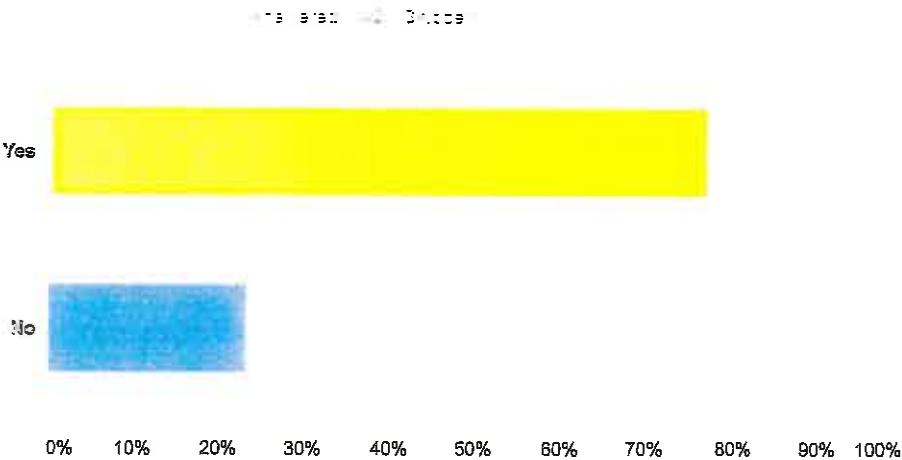
**Total** 142

**Q2 How often do you and/or your family members use the roads in the Broad Cove neighborhood for something other than driving (i.e. walking, jogging, biking, etc.)**



Answer Choices	Responses	
Never	4.93%	7
1-2 times per week	17.61%	25
3-5 times per week	35.21%	50
More than 5 times per week	42.25%	60
Total		142

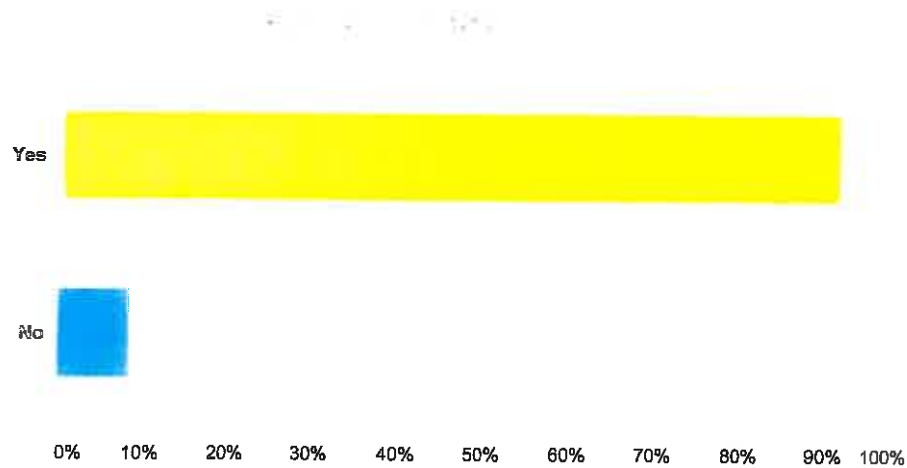
Q2 Have you ever felt that your safety--or the safety of your family or home--has been jeopardized due to unsafe driving in the Broad Cove neighborhood?



Answer Choices	Responses
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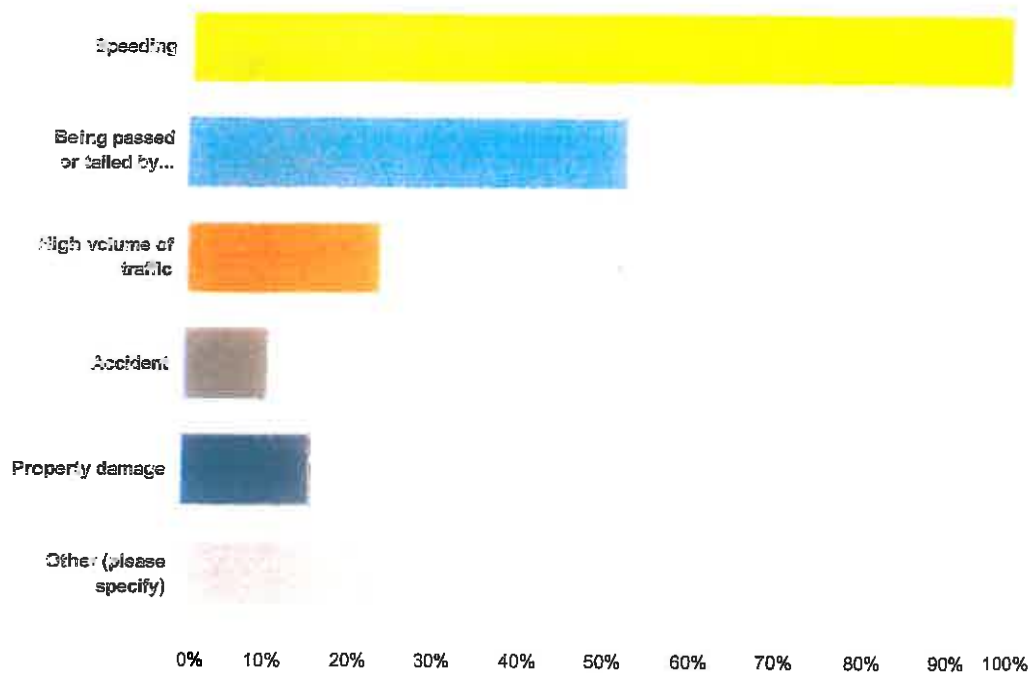
Yes	75.76%	109
No	23.24%	33
Total		142

22 Have you ever experienced someone driving in an unsafe manner in the Broad Cove neighborhood?



Answer Choices	Responses	
Yes	91.49%	129
No	8.51%	12
Total		141

23 If you answered yes to the previous question, what types of unsafe behaviors have you witnessed? (Select all that apply)



Answer Choices

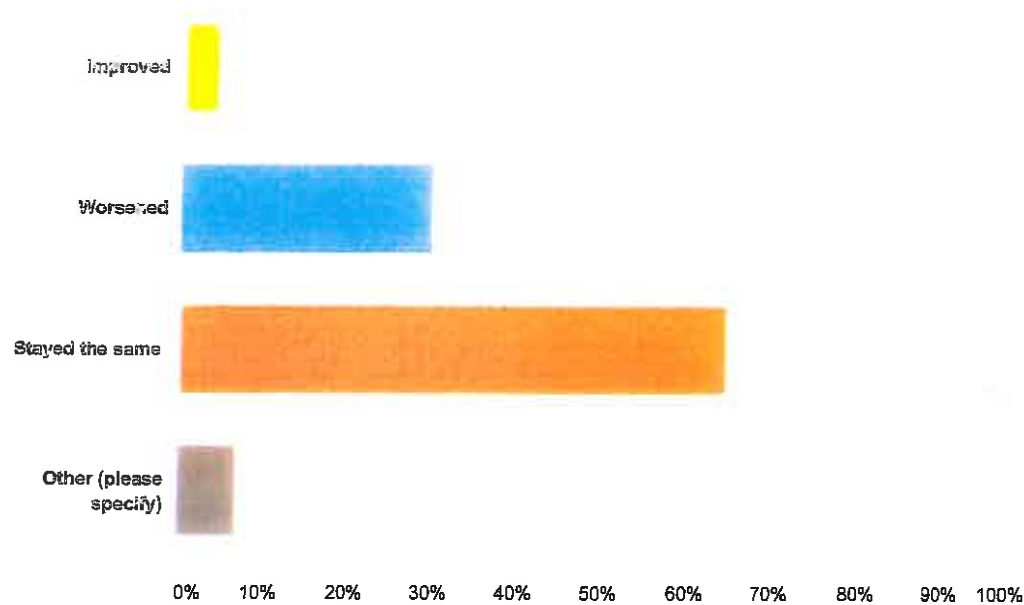
Responses

Speeding	96.95%	127
Being passed or tailed by another car when driving the speed limit	51.91%	68
High volume of traffic	22.90%	30
Accident	9.32%	13
Property damage	15.27%	20
Other (please specify)	24.43%	32

Total Respondents: 131

**Q6 During your time in the Broad Cove neighborhood, do you believe the traffic safety issues have improved, worsened, or stayed the same?**

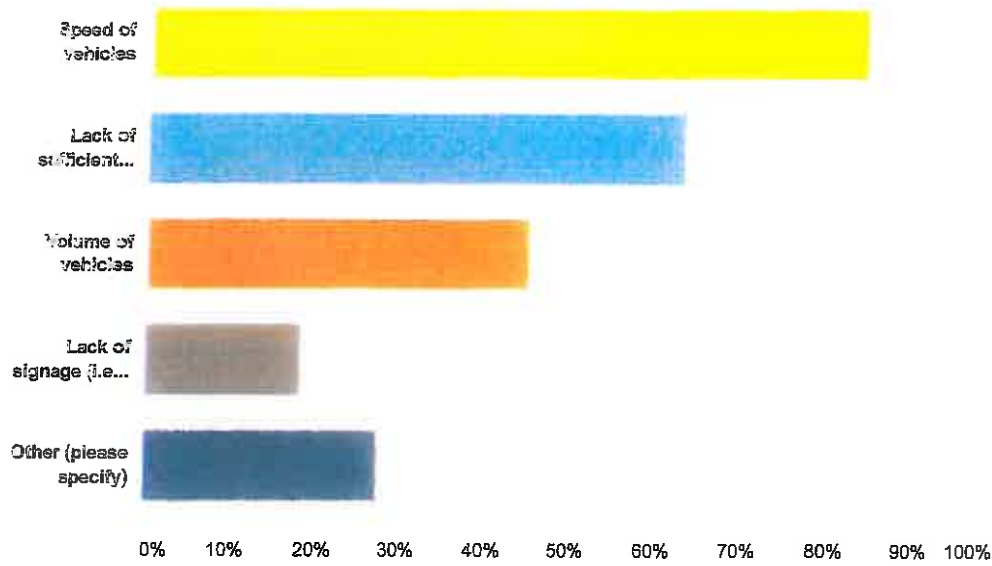
Answered: 141 Skipped: 0



Answer Choices	Responses	
Improved	4.26%	5
Worsened	29.79%	42
Stayed the same	64.54%	91
Other (please specify)	7.09%	10
Total Respondents: 141		

101 Which of the following do you perceive contributes to unsafe driving in Broad Cove? (Select all that apply)

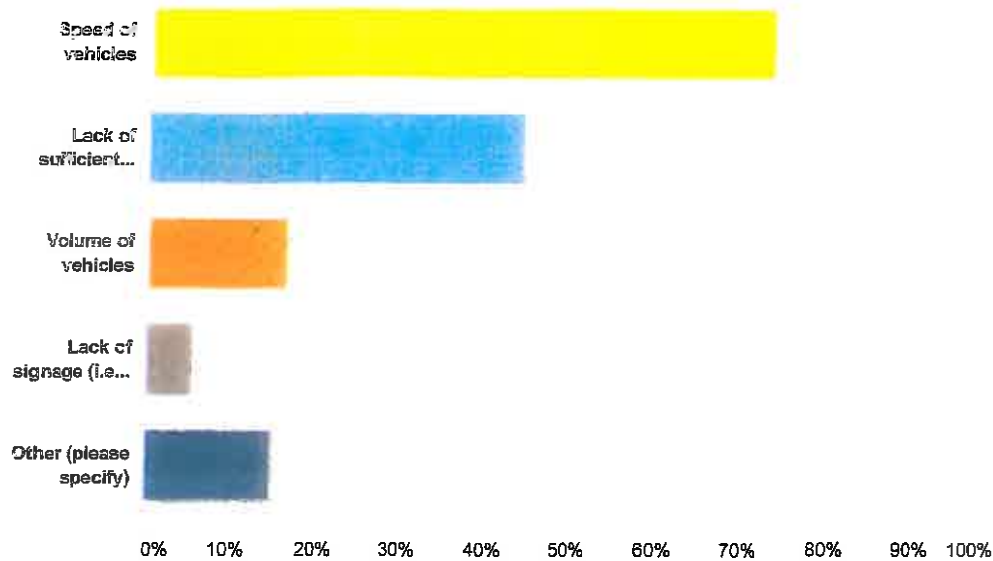
RECAPTURE HERE



Answer Choices	Responses	
Speed of vehicles	84.51%	120
Lack of sufficient entry and exit points	63.38%	90
Volume of vehicles	45.07%	64
Lack of signage (i.e. stop, speed, etc.)	18.31%	26
Other (please specify)	27.46%	39
Total Respondents: 142		

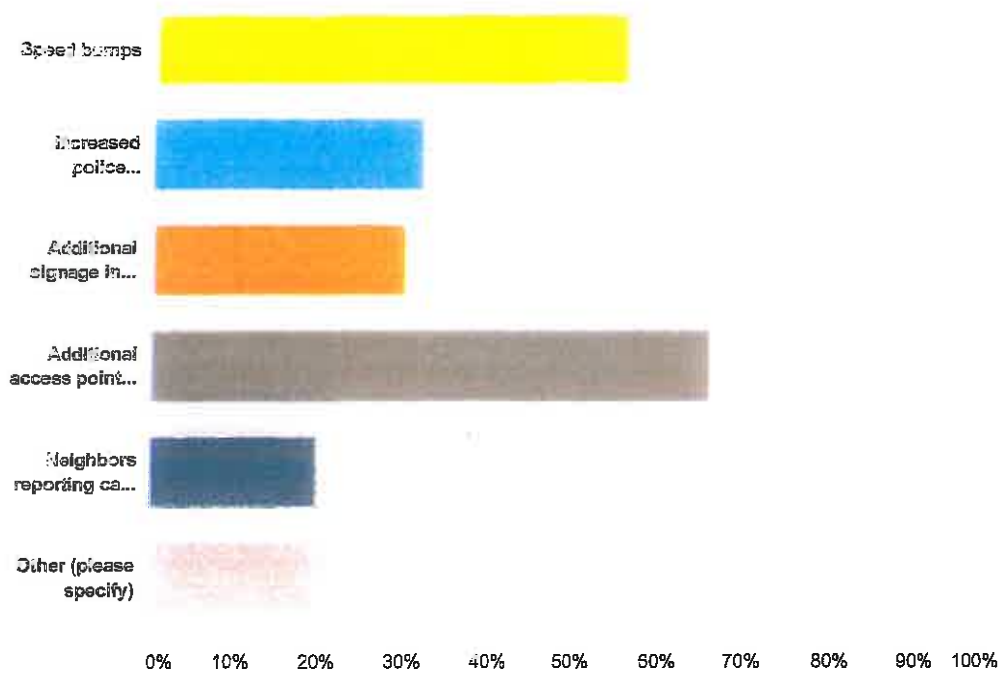
Q8 Which of the following do you perceive to be the most significant contributor to unsafe driving in the Broad Cove neighborhood? (Select all that apply)

Answered: 142 Skipped: 0



Answer Choices	Responses	
Speed of vehicles	73.57%	103
Lack of sufficient entry and exit points	44.29%	62
Volume of vehicles	16.43%	23
Lack of signage (i.e., stop, speed, etc.)	5.71%	8
Other (please specify)	15.00%	21
Total Respondents: 140		

Q9 What measures do you feel would be most effective in making our neighborhood safer? (Select all that apply)

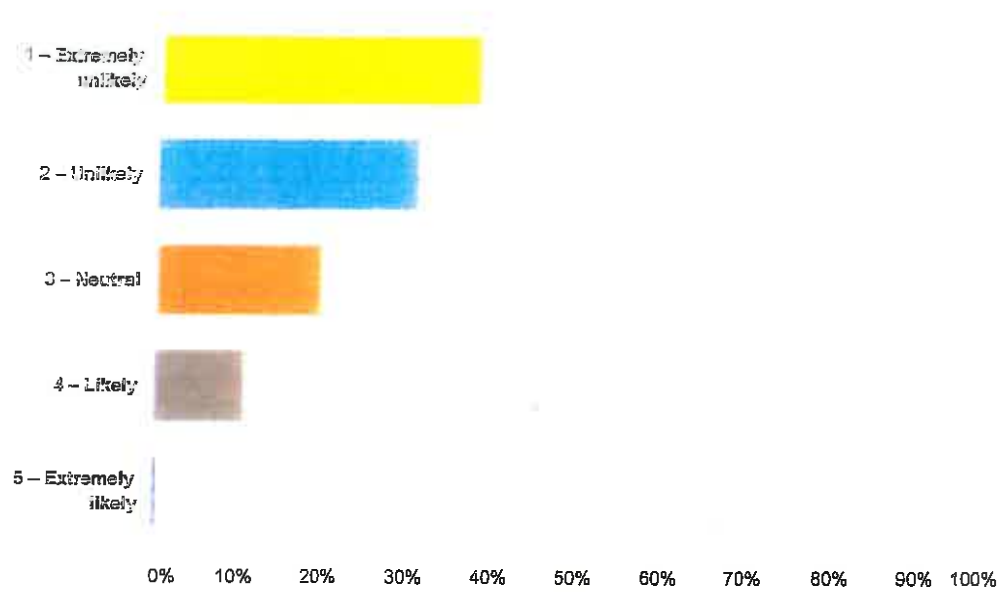


Answer Choices	Responses	
Speed bumps	56.03%	79
Increased police surveillance	31.91%	45
Additional signage in neighborhood	29.79%	42
Additional access point(s) into/out of neighborhood	65.96%	93
Neighbors reporting cases of unsafe driving to police	19.36%	28
Other (please specify)	21.28%	30

Total Respondents: 141

Q10 What do you think is the likelihood of being issued a ticket for driving over the speed limit in our neighborhood? (1 is extremely unlikely and 5 is extremely likely)

1 2 3 4 5



**Answer Choices**

**Responses**

1 - Extremely unlikely	38.03%	54
2 - Unlikely	30.99%	44
3 - Neutral	19.72%	28
4 - Likely	10.56%	15
5 - Extremely likely	0.70%	1
		142



## CAPE ELIZABETH TOWN COUNCIL MINUTES

Regular Meeting # 8-00-01

November 13, 2000

6:30 p.m.

		Present	Absent
Penelope P. Carson, Chairman	36 Trundy Road	x	
Henry N. Berry III	110 Two Lights Rd.	x	
Carol Fritz	1 Stirrup Road	x	
Ruth E. McCleery Watson	7 Winding Way		x
John W. McGinty	86 Brentwood Road	x	
John E. "Jack" Roberts, Jr.	185 Fowler Road	x	
Anne E. Swift-Kayatta	14 Stone Bridge Road	x	
Jamie Cluchey, Student Representative			x
Kristin Elia, Student Representative		x	
Debra Lane, Town Clerk			x
Michael McGovern, Town Manager		x	

The Town Council met at 6:30 p.m. at the Town Hall for the purpose of visiting property at 343 Ocean House Road. The Town Council returned at 7:10 p.m. Councilor Swift-Kayatta did not participate in the tour of 343 Ocean House Road.

The balance of the meeting was convened at 7:30 p.m.

Pledge of Allegiance to the Flag

Reports and Correspondence

Councilor Roberts, Appointments Committee Chair, identified vacancies on town boards and commissions and encouraged applications.

Councilor Berry thanked citizens for their support of the fundraising drive for the thermal imaging camera. He indicated that Social Security beneficiaries were concerned with taxes being due on the third of the month.

Councilor McGinty noted an upcoming meeting of the Cumberland County Budget Committee. He also thanked citizens for their support in the recent campaign for state representative and congratulated Janet McLaughlin on her election.

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**Town Manager's Report**

The town manager thanked Debra Lane and others who assisted with the November 7<sup>th</sup> election. He also mentioned that the Council will hold a public hearing on November 27<sup>th</sup> on the proposed purchase of 343 Ocean House Road. There will also possibly be on the agenda an award of bid for proposed improvements to public safety facilities.

Citizens' Discussion of Items Not on the Agenda- None

**Moved by H. Berry and Seconded by A. E. Swift-Kayatta to approve the Minutes of Meetings # 5-00-01, 6-00-01 and 7-00-01 held October 2, 4 and 12, 2000. (6 Yes) (0 No)**

**Item # 47-00-01**

Public hearing and action upon a petition requesting that all of Jordan Farm Road be a paved road with full time access.

Chairman Carson made some welcoming introductory remarks and opened the public hearing at 7:45 p.m. The following speakers offered comments. Some speakers, in addition to speaking in favor or against a paved access road, also suggested better enforcement, speed bumps and other measures.

Richard Sullivan, Two Lights Road- Opposed  
Asher Kramer, Ledgewood Road -In Favor  
Rich Ryker, Jordan Farm Road-In Favor  
Bob Packer, Hunts Point Road- In Favor  
Lynne & E.J. Loveitt, Broad Cove Road- In Favor  
Jacqueline Hedlund, Ledgewood Lane- In Favor  
John Hollis, Broad Cove Road-In Favor  
Jeffrey Thaler-Attorney for Proponents- Also provided written comments  
Ann Kaplan, Winding Way-Opposed  
Colleen Taintor, Jordan Farm Road-Opposed-Presented Petition  
Stephen Pelletier-Woodlot Alternatives, Inc. Wetland Scientist for the Proponents  
Donna Sterling, Broad Cove Road- In Favor  
Trish Wasserman, Running Tide Road-Opposed  
Anton Ward, Two Lights Road-Opposed  
Jim Wasserman, Running Tide Road-Opposed  
Frank Leavitt, Running Tide Road-Opposed  
Jane Snerson, Salt Spray Lane- In Favor  
Elizabeth Rath, Winding Way-Opposed  
Steve Blumenthal, Jordan Farm Road, Opposed  
Jamie Kilbreth, Attorney for Opponents  
Louise Sullivan, Two Lights Road-Opposed-Presented Petition  
Gail Bruzgo, Broad Cove Road-In Favor  
Sylvia Kostopoulos, Broad Cove Road-In Favor

Hector Terazza, Broad Cove Road-In Favor  
David Sterling, Broad Cove Road-In Favor  
Dan Fishbein, Salt Spray Lane- In Favor  
Robert Bogosian, Salt Spray Lane-In Favor  
Mary Ellen Peltier, Broad Cove Road-In Favor  
Thomas Egan, Hannaford Cove Road-Opposed  
Despina Athans, Hunts Point Road- In Favor  
J. Morris, Hunts Point Road-Opposed  
Pam Mullin, Two Lights Road-Opposed  
Holly Overton, Jordan Farm Road-Opposed  
David Glaser, Salt Spray Lane-In Favor  
Trisha Naddaff, Fessenden Road- Opposed  
Sarah Tierney, Hunts Point Road- Opposed  
Chris Taintor, Jordan Farm Road- Opposed  
Marianne Terazza, Broad Cove Road- In Favor  
Pete Black-Hunts Point Road-Opposed  
Nick Gnazzo, Roundabout Lane- Leans to Second Paved Road  
Frederick Emery, Broad Cove Road- In Favor

The public hearing was closed at 10:50 p.m.

Councilor McGinty asked how many homes had been built in Broad Cove since 1990. Ms. O'Meara said approximately 20 homes.

Councilor Roberts asked if a study had been done on runoff from gravel roads vs. paved roads. The answer from the town planner was not to her belief.

Councilor McGinty asked Ms. O'Meara to explain the history of how the gravel road came about. Was it a compromise with the DEP?

Councilor Fritz asked why two chains are necessary? The town manager responded that it was due to turnarounds.

Councilor Roberts said he did not think paving the road 18 feet would damage the wetland. He would support a 20 foot wide paved surface with speed bumps with a 15 mph speed limit. He does not believe the DEP will allow paving, but we should try it. He believes a sidewalk on Broad Cove Road would speed traffic.

Councilor Fritz worries about moving traffic to Two Lights Road. There is a problem with a straight road. She believes traffic goes faster on a straight wide road. She is concerned that the Two Lights area still has potential for development. She is concerned that the Two Lights traffic and the Broad Cove traffic eventually meet on Route 77. She believes if Jordan Farm Road was opened to traffic and was kept narrow, as in the suggestion of Councilor Roberts, that it would be unsafe for pedestrians. Councilor Fritz believes the compromise was made when the DEP agreed to a narrow emergency access gravel road. She does not recommend speed bumps or a speed table. Drivers go fast, slow for a brief time and immediately speed up again. She agrees that the road should be open when there are projects on the road. She believes there should be only one chain. There should be enforcement and tickets should be issued. She is not in favor of asking the Planning Board or the DEP to look at his issue.

Chairman Carson noted that the speed problem is largely caused within the neighborhood. She asked about the Roundabout Lane connector. She asked if there are other alternatives. There do not appear to be on publicly owned property.

Councilor Swift-Kayatta said that she had received much public input on the issue. She is looking at safety, environmental issues, cost and fairness. She does not think opening Jordan Farm Road addresses speeding. Volume of traffic could be rerouted, but there would be just as much total traffic. 3/4ths of the traffic would still be going out Broad Cove Road if Jordan Farm Road were to be paved. The traffic that would be going out to Two Lights Road would result in 91% more traffic than on Broad Cove Road. We need to be sure that the gate is unlocked when it is supposed to be unlocked. Jordan Farm Road provides open space for all Cape Elizabeth residents. She noted that the DEP consistently rejected a paved road. She does not believe that the DEP would change its position. We can argue about the accuracy of any cost estimate, but spending so much in one location would be a concern to other citizens. On the fairness issue, she reflected upon the additional traffic impact on Two Lights Road.

Councilor McGinty agreed that the DEP had made a compromise. He agreed that the speeding is an enforcement issue. We should not shift the problem from Broad Cove over to Two Lights.

Councilor Berry said the speed and volume issues should not be shifted to Two Lights Road. He said when the traffic counts were done on Two Lights Road, it was not done during the peak summer season. We need to address the speed limit enforcement issue.

Chairman Carson said the speed issue needs to be partially resolved in the neighborhood. She agrees that this is not the time to approach the Maine DEP. She will vote not to move the problem from one neighborhood to another neighborhood.

Moved by J. Roberts to refer the issue to the Planning Board for a 20 foot paved width with 15 mph and speed humps. Motion failed due to lack of a second.

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Moved by J. McGinty and Seconded by H. Berry that the petition to pave Jordan Farm Road be denied and for the matter to not be referred to the Planning Board and/or the DEP. (5 Yes) (1 No) Roberts

Moved by J. McGinty and Seconded by H. Berry to suspend the rules in order to take up new items after 11 p.m. (6 Yes) (0 No)

**Item # 48-00-01**

Public hearing and action upon proposed revised appendices to the General Assistance Regulations

Chairman Carson opened the public hearing. There were no public comments.

Moved by J. McGinty and Seconded by H. Berry to approve the appendices as presented. (6 Yes) (0 No)

**Item # 49-00-01**

Action upon a request from the Purpoodock Club to approve their renewal malt, spirituous and vinous license and special amusement permit.

Moved by H. Berry and Seconded by J. McGinty to approve the renewal malt, spirituous and vinous license for the Purpoodock Club.

(6 Yes) (0 No)

**Item # 50-00-01**

Action upon proposed amendments to the purchasing procedure

Moved by A. E. Swift-Kayatta and Seconded by H. Berry to approve the proposed amendments to the purchasing procedure.

(6 Yes) (0 No)

**Item # 51-00-01**

Action upon a request from Verizon New England, Inc and Central Maine Power Company for a pole location on Jordan Way

Moved by H. Berry and Seconded by J. McGinty to approve the pole location from Verizon New England, Inc. and Central Maine Power Company for pole locations on Jordan Way

(6 Yes) (0 No)

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November 13, 2000

**Citizens' Discussion of Items Not on the Agenda-None**

Moved by J. McGinty and Seconded by C. Fritz to adjourn at 11:42 p.m.

The next scheduled meeting of the Town Council is a public hearing on November 27, 2000 at 7:30 p.m. on the proposed purchase of land and buildings at 343 Ocean House Road. As bids are being opened on November 16, 2000 for the improvements to the police and fire stations in the town center, it is possible that related items might also be on the agenda on November 27<sup>th</sup>.

The December regular meeting of the Town Council is scheduled for Monday, December 11, 2000 at 7:30 p.m. at the Town Hall.

Michael K. McGovern  
Clerk Pro-Tem



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11/16/00

### Speed enforcement will tighten on Broad Cove Road

The town Police Department has promised better enforcement of the speed limit at Broad Cove Road in the aftermath of a controversial decision to deny a petition asking to open a second access to that neighborhood from Two Lights Road.

The Town Council voted 5-1 to deny the petition requesting that Jordan Farm Road, currently a partially paved, emergency access route onto Two Lights Road, be opened as a full access road.

Proponents of the measure presented a petition with signatures representing 147 homes of the approximately 230 homes in the Broad Cove subdivision, asking that Jordan Farm Road be opened as a full-time second access to the neighborhood. Chief among their concerns was the volume and speed of traffic forced to use the only access into the neighborhood, Broad Cove Road. Many speakers testified that they feel unsafe along the road, and fear for the safety of their children. They are also concerned that the emergency access currently afforded at Jordan Farm Road -- provided by a locked chain gate -- is inadequate when emergencies might block Broad Cove Road. They also said that the neighborhood was originally supposed to have two means of access, and that no neighborhood of such size would today be approved with only one way to get in and out.

Opponents of the measure were out in full force, however, stating that even though sending some of the Broad Cove traffic out onto Two Lights Road might alleviate some on Broad Cove Road, it would only be shifting traffic and safety hazards from one road to another. Opponents also testified as to the environmental value of the wetlands surrounding Jordan Farm Road.

The road was established as emergency access with the 1990 approval of the Highlands at Broad Cove subdivision. The Department of Environmental Protection issued a permit to allow an 18-foot wide gravel road for emergency access.

After hearing evenly divided testimony that lasted more than three and half hours, Town Councilors at their meeting Nov. 13 voted not to pursue approaching the DEP to allow full access.

Although proponents of the petition testified that rules have changed, and the DEP might approve more paving there, councilors were skeptical that the permit restrictions would change. Councilors were clearly torn between the two concerns, but the majority voted to deny the petition mainly because they believed it would be exacerbating existing traffic on Two Lights Road, while only helping traffic on Broad Cove Road a little.

There were other concerns, as those proposed by Councilor Anne Swift Kayatta, including cost to the entire town (between \$125,000-\$150,000) to address the needs of one neighborhood.

Councilor Jack Roberts cast the dissenting vote. He had made the first motion that the town approach the DEP for a permit to pave a 20-foot access road with speed bumps and a 15-mph speed limit. The motion failed to gain a second and died.

Councilor John McGinty made a second motion to deny the petition, which passed 5-1.

Before voting Council Chairwoman asked town staff if there were any other rights of way over which a second access could be made. Town Manager Michael McGovern said there was no publicly held land.

After the meeting McGovern said that enforcement of the speed limit would be enforced at Broad Cove Road in a noticeable way. "People will see flashing blue lights and they will see tickets being issued," he said.

**TRAFFIC IMPACT STUDY  
BROAD COVE SUBDIVISION  
CAPE ELIZABETH, MAINE**

**Prepared for**

**LAND USE CONSULTANTS**

**and**

**BROAD LIGHTS ASSOCIATES**

**By**

**William C. Eaton, P.E.  
Transportation Engineer/Planner  
November, 1985**

## TRAFFIC IMPACT STUDY BROAD COVE SUBDIVISION

### A. INTRODUCTION

This report has been prepared for the proposed Broad Cove Subdivision to be developed on two parcels of land located generally north and south of Hunts Point Road and west of Winding Way Road. The subdivision will consist of 24 lots, one which is currently occupied by a residence. As part of this development, Hunts Point Road will be extended from its existing terminus to Two Lights Road, thus providing a second access to the entire Broad Cove residential area.

This report will address: (1) the traffic impacts of increased residential development resulting from the subdivision, including the impacts of a second access to the entire Broad Cove residential area; and (2) safety considerations associated with the establishment of a second external access road to the site.

### B. EXISTING CONDITIONS

#### 1. Traffic

Traffic volume data was obtained from the Maine Department of Transportation. The most recent data available is from traffic counts conducted in 1981. Traffic volume data for the area is summarized below in terms of Average Annual Daily Traffic - AADT.

<u>Location</u>	<u>1981 AADT</u>
Route 77/north of Broad Cove Road	4752
Route 77/south of Two Lights Road	2641
Broad Cove Road/east of Route 77	1475
Two Lights Road/southeast of Route 77	1502
Two Lights Road/south of Fessenden Road	1586

Previous traffic volume data available for use in establishing growth trends is 10 years old, and due to the growth patterns in the area is not considered valid for use in this analysis. Analysis on other sections of Route 77 in Cape Elizabeth (Cumberland Farms Traffic Impact Study - March 1984) indicates growth rates in the area of 1.5 percent annually. Use of this growth rate yields the following estimate of 1985 AADT:

<u>Location</u>	<u>Estimated 1985 AADT</u>
Route 77/north of Broad Cove Road	4978*
Route 77/south of Two Lights Road	2867*
Broad Cove Road/east of Route 77	1800**
Two Lights Road/southeast of Route 77	1594
Two Lights Road/south of Fessenden Road	1757

In assessing the traffic impacts of the proposed development, the impact of changes in traffic on the intersections of Rt. 77 with Broad Cove Road and Two Lights Road, and the operation of the new intersection of Two Lights Road and Hunts Point Road will be the primary concern. To evaluate these intersections, capacity analysis techniques for unsignalized T-intersections contained in Chapter 10 of the 1985 Highway Capacity Manual were used. For this technique an intersection's Level of Service (L/S) is based upon the "reserve capacity" available. The relationship between reserve capacity and intersection level of service is as follows:

<u>Reserve Capacity</u>	<u>Level of Service</u>
400+	A - little or no delay
300 - 399	B - short delays
200 - 299	C - average delays
100 - 199	D - long delays
0 - 99	E - very long delays

The critical period generally used for capacity analysis is the p.m. peak hour. For Broad Cove Road, daily traffic is estimated at 1800 vehicles (180 units @ 10 trips/unit per Trip Generation, Institute of Transportation Engineers, 1983). During the p.m. peak hour, traffic flow is estimated at 67 vehicles outbound (0.37 trips/unit) and 114 vehicles inbound (0.63 trips/unit), based on data contained in the Trip Generation report.

For Rt. 77 and Two Lights Road, the typical peak condition used is the 30th highest hour volume (i.e. volumes will be higher for only 29 hours throughout a year). Based on MDOT information for recreation oriented roadways, the 30th highest hourly volume, expressed as a percent of AADT, is 15.8. Based on estimated 1985 AADT 30th hourly volumes for Rt. 77 and Two Lights Road is as follows.

- 
- \* growth rate applied to average Rt. 77 volume, with net increase added to 1981 volume
  - \*\* estimated based on 180 existing units at 10 trips/unit daily

<u>Location</u>	<u>est. 1985 AADT</u>	<u>est. 30th hour</u>
Rt. 77/N of Broad Cove Rd.	4978	786
Rt. 77/S of Two Lights	2867	453
Two Lights/SE of Rt. 77	1594	252
Two Lights/SE of Fessenden	1757	278

To provide a conservative assessment for Two Lights Road, the higher 30th hourly volume of 278 vehicles (SE of Fessenden Rd.) will be used for analysis. To perform the capacity analysis, the distribution of peak hour traffic on the roadways, and the turning patterns are necessary. These were estimated using an empirical volume balancing technique described in Appendix A.

For Rt. 77 at Broad Cove, the estimated peak hour movements, Reserve Capacity (RC) and Level of Service (L/S) are as follows (asterisks indicate critical movements analyzed):

#### Rt. 77 @ Broad Cove Road

<u>Movement</u>	<u>Peak Hr. Volume</u>	<u>RC</u>	<u>L/S</u>
Rt. 77 SB thru	341	n.a.	
Rt. 77 SB left*	91	675	A
Rt. 77 NB thru	292	n.a.	
Rt. 77 NB right	23	n.a.	
Broad Cove left*	13	234	C
Broad Cove Right*	54	636	A
Broad Cove shared lane**	67	421	A

\*\*assumes insufficient room for right and left turn lane

For the Rt. 77 and Two Lights Road intersections (both north and south), analysis results are as follows (asterisks indicate critical movements):

#### Rt. 77 @ Two Lights Road - North

<u>Movement</u>	<u>Peak Hr. Volume</u>	<u>RC</u>	<u>L/S</u>
Rt. 77 SB thru	229	n.a.	
Rt. 77 SB left*	125	762	A
Rt. 77 NB thru	190	n.a.	
Rt. 77 NB right	0	n.a.	
Two Lights left*	0	n.a.	
Two Lights right*	125	642	A

### Rt. 77 @ Two Lights - South

<u>Movement</u>	<u>Peak Hr. Volume</u>	<u>RC</u>	<u>L/S</u>
Rt. 77 SB thru	229	n.a.	
Rt. 77 SB left*	0	n.a.	
Rt. 77NB thru	190	n.a.	
Rt. 77 NB right	14	n.a.	
Two Lights left*	14	424	A
Two Lights right*	0	n.a.	

### 2. Safety

Accident records on file at MDOT were reviewed for Rt. 77 and Two Lights Road in the vicinity of the proposed development. For the period 1981-84 inclusive, 7 accidents were recorded. Two involved vehicle collisions (one rear-end, one sideswipe), two were run-off-the-road accidents, and three involved collisions with deer on Two Lights Road between Rt. 77 and Fessenden Road. Discounting the collisions with deer, there is an average of one "normal" accident per year for the area. No pattern as to location, accident type, etc., is evidenced, thus there appears to be no existing traffic or roadway related safety hazard.

### C. PROPOSED DEVELOPMENT IMPACT

#### 1. Traffic

The proposed development will result in the construction of a new access road connecting the existing Hunts Point Road with Two Lights Road, thus providing a second access to Rt. 77 for the entire Broad Cove residential area. Because of the second access road, a number of residential units, both existing and proposed, will use the Hunts Point Road - Two Lights road route to gain access to Rt. 77. for this analysis it is assumed that route preference will be based upon travel time. Average running speeds (factored to consider intersection and other delays) used to assign preferred routings were as follows:

- 35 mph on Two Lights Road
- 25 mph on Broad Cove Road to curve before Ledgewood Lane intersection
- 20 mph elsewhere in the Broad Cove area

Based upon calculated travel times, the equilibrium point lies approximately at the Hunts Point Road - Winding Way intersection. For this analysis then, all lots fronting or accessing Hunts Point road west of Winding Way will be

assigned to the Hunts Point - Two Lights Road Routing. All lots east of the equilibrium point, (or accessing roads east of that point) will be assigned to a Broad Cove Road route. Lots accessed by Winding Way will be assumed to split with 50 percent assigned to each route.

Capacity analysis to assess the impact of the development will include not only the 24 lots (23 developable) proposed, but will also consider all existing vacant lots. In this total build-out scenario there will be 228 units in the Broad Cove area. Based on route assignments, 175 will use the current Broad Cove route, with 53 being assigned to the Hunts Point - Two Lights Road routing.

Assigning the revised traffic routings to the new roadway network and performing unsignalized T-intersection capacity analysis yields the following (asterisk indicates critical movements):

<u>Movement</u>	<u>Peak Hr. Volume</u>	<u>RC</u>	<u>L/S</u>
<u>Broad Cove @ Rt. 77</u>			
Rt. 77 SB thru	382	n.a.	
Rt. 77 SB left*	88	638	A
Rt. 77 NB thru	334	n.a.	
Rt. 77 NB right	22	n.a.	
Broad Cove left*	13	201	C
Broad Cove right*	52	597	A
Broad Cove shared lane	65	392	B-A
<u>Two Lights @ Rt. 77 - North</u>			
Rt. 77 SB thru	244	n.a.	
Rt. 77 SB left*	151	729	A
Rt. 77 NB thru	193	n.a.	
Rt. 77 NB right	0	n.a.	
Two Lights left*	0	n.a.	
Two Lights right*	141	625	A
<u>Two Lights @ Rt. 77 - South</u>			
Rt. 77 SB thru	244	n.a.	
Rt. 77 SB left*	0	n.a.	
Rt. 77 NB thru	193	n.a.	
Rt. 77 NB right	21	n.a.	
Two Lights left*	18	400	A
Two Lights right*	0	n.a.	

<u>Movement</u>	<u>Peak Hr. Volume</u>	<u>RC</u>	<u>L/S</u>
<u>Hunts Point Rd. (new) @ Two Lights</u>			
Two Lights SE B thru	139	n.a.	
Two Lights SE B left*	33	904	A
Two Lights NW B thru	139	n.a.	
Two Lights NW B right	5	n.a.	
Hunts Point left*	5	494	A
Hunts Point right*	20	826	A
Hunts Point shared lane	25	717	A

As can be seen, nearly all critical movements are projected to operate at a very high level of service, with average delays experienced only for left turn vehicles exiting Broad Cove Road (as was also found in analysis of existing conditions).

## 2. Safety

Since there is no evidence of an existing safety hazard on Rt. 77 or Two Lights Road in the Broad Cove vicinity, the primary safety consideration associated with the proposed development is exiting sight distance at the proposed Hunts Point Road - Two Lights Road intersection. The sight distance standard for a rural intersection such as this is 465 feet, assuming a 45 mph speed (40 mph posted) a height of eye of 3.5', height of object of 4.25' and 15' setback from the edge of pavement (per Policy on Geometric Design of Highways and Streets, AASHTO, 1984). Field measurements indicate that 825' is available to the southeast, with 850' to the northwest.

## D. SUMMARY AND CONCLUSIONS

1. The proposed subdivision of 24 lots (23 developable) will increase traffic generated from the area by 230 trips daily. Assuming build-out of existing vacant lots, total trips generated from the entire Broad Cove area will increase from an estimated 1800 trips daily, to 2286 trips daily.

2. Existing p.m. peak hour flow on Broad Cove Road is estimated at 180 vehicles, 67 outbound, 114 inbound (do not add due to rounding). Assuming 30th highest hourly volumes on Rt. 77, the Rt. 77 - Broad Cove Road intersection operates quite well, with only the left turn from Broad Cove Road experiencing average delays. (reserve capacity of 234 - L/S "C")

3. Existing peak hour flow on Two Lights Road, using both highest hour volumes is 278 vehicles, 139 inbound and 139 outbound. Capacity analysis of both north and south intersections with Rt. 77 indicates that all movements operate with little or no delay.

4. The extension of Hunts Point Road to Two Lights Road will alter existing traffic flow. It is estimated that Broad Cove Road volumes will be reduced from 1800 to 1750 vehicles daily (185 to 175 at peak hour), and Two Lights Road will increase from 1757 to 2287 vehicles daily (278 to 331 at peak hour). Peak-hour capacity analyses of all intersections under full build-out conditions indicate that all critical movements, except the Broad Cove left-turn at Rt. 77, will continue to operate with little or no delay. The Broad Cove left turn will undergo a slight reduction in reserve capacity, from 234 to 201, indicating that L/S "C", average delays, will continue to be experienced for this movement.

5. Based on 4 years of accident experience there appears to be no existing traffic or roadway hazard. The proposed intersection of Hunts Point Road and Two Lights Road has sight distance well in excess of the required 465 feet for a 45 mph speed.

6. Based on the results of all analyses, no significant negative impacts on traffic flow or safety are anticipated to result from the proposed development.

## APPENDIX A

### ROADWAY VOLUME AND TURNING MOVEMENT ESTIMATES

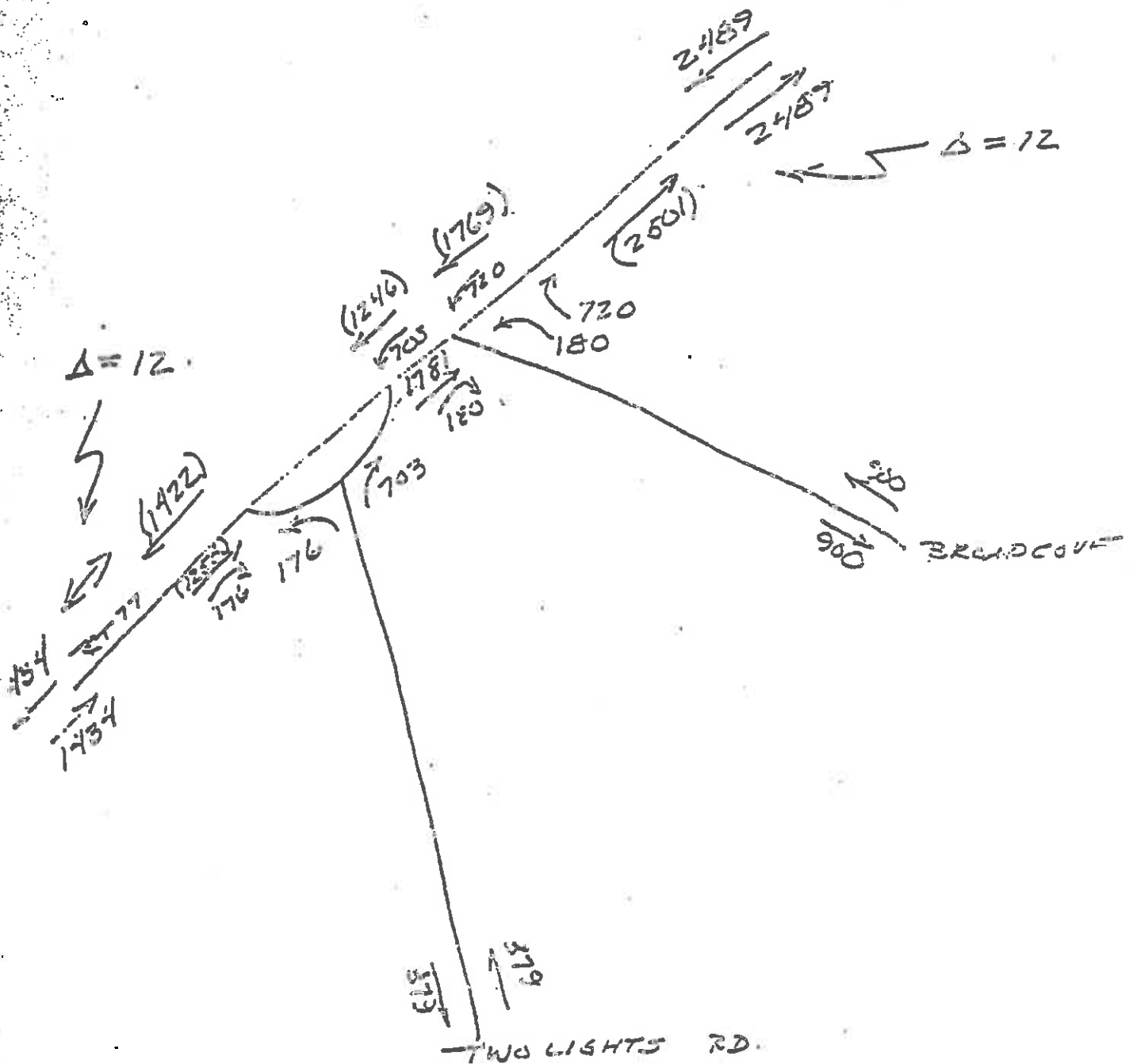
Using the estimated 1985 AADT's 24 hour volumes were empirically balanced to determine the northbound/southbound directional split for traffic entering and exiting Broad Cove Road and Two Lights Road at Rt. 77. For this analysis, directional split on each roadway was assumed to be 50/50 for the 24 hour period (for specific periods during the day the split will vary, however over the entire 24 hours the average split should be 50/50 as assumed). Based on this analysis it was determined that at the Rt. 77 intersections, traffic entering and exiting Broad Cove and Two Lights Roads is oriented 80 percent toward the north (Portland) and 20 percent toward the south. (Figure 1)

With a basic 80/20 north/south split as a basis, p.m. peak hour flow distribution was considered. For a minor arterial such as Rt. 77, a typical directional flow distribution is 55 percent outbound, 45 percent inbound, thus this was used as a starting point. Broad Cove and Two Lights Roads were assumed initially to have a typical residential flow split of 63 percent inbound (from Rt. 77) and 37 percent outbound, with an 80/20 north/south directional distribution for turning movements at Rt. 77. This distribution did not work well, thus an additional assumption was considered. Because Two Lights Road serves a recreation area (Two Lights State Park) its directional distribution will probably not be predominately inbound during the p.m. peak hour due to visitors leaving the park. Thus direction distribution was modified from 63/37 inbound/outbound, to 50/50. After several trials, the north/south directional distribution for movements at the Two Lights - Rt. 77 intersection was also modified. Empirical balancing of peak hour volumes resulting in the following (see also Figure 2):

- Rt. 77 - 55/45 Southbound/Northbound directional distribution
- Broad Cove - 63/37 inbound/outbound distribution (typical residential p.m. peak hour distribution), with 80/20 north/south distribution of turning movements at Rt. 77
- Two Lights - 50/50 directional distribution with 90/10 north/south distribution

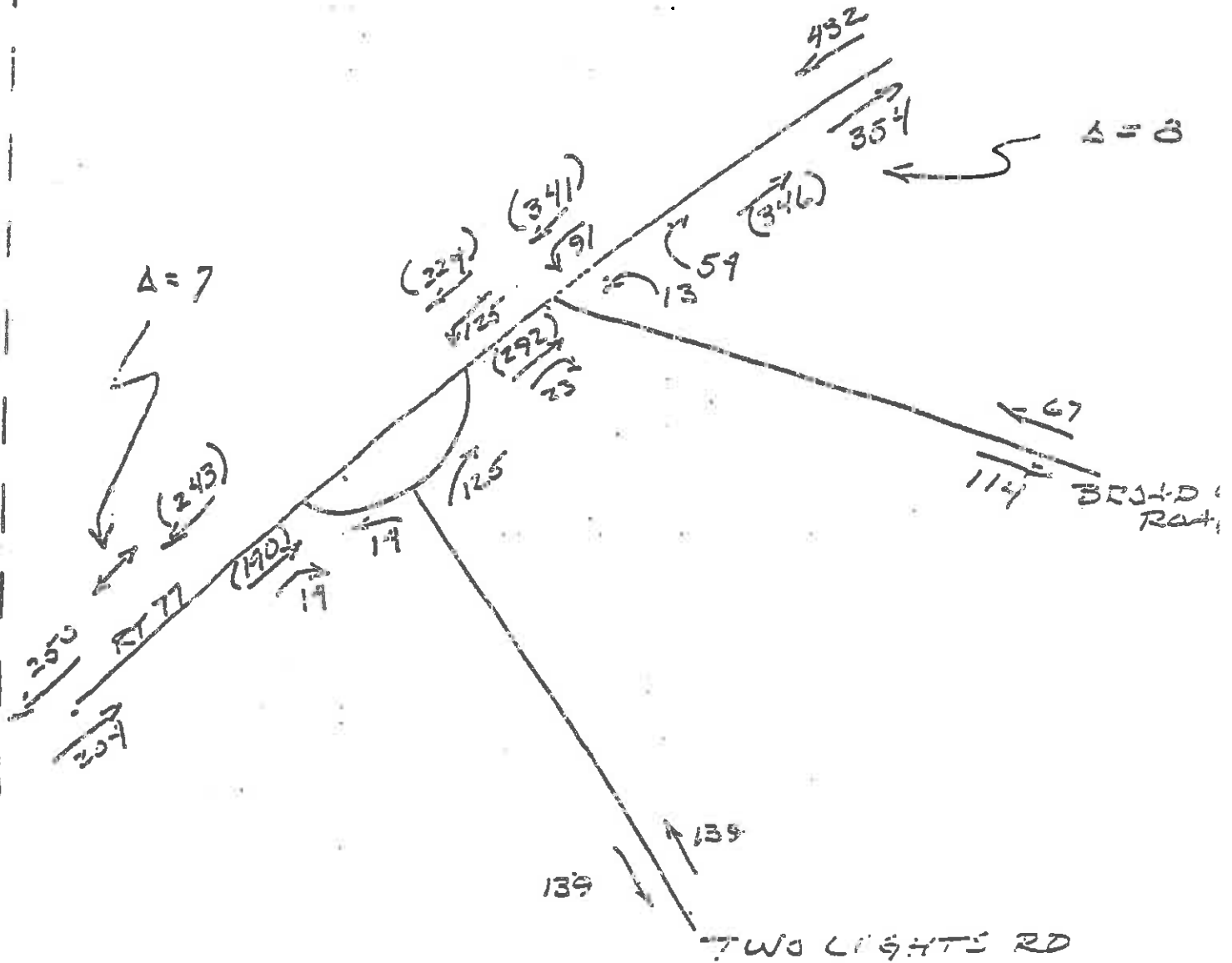
For new trips due to the "build-out" scenario, a 63/37 directional distribution and 80/20 intersection distribution (@ Rt. 77) was used for both Broad Cove and Two Lights Road.

FIGURE 1 - 24 HOUR BALANCED VOLUMES



ESTIMATED 1985 AADT ON RT 77, BROAD COVE AND TWO LIGHTS RD. / 50/50 DISTRIBUTION ON ALL ROADS ASSUMED FOR 24 HR. PERIOD VOLUMES BALANCED TO DETERMINE NORTH/SOUTH DISTRIBUTION AT RT 77 INTERSECTION WITH BROAD COVE AND TWO LIGHTS RD.

FIGURE 2 - PM PEAK HOUR BALANCED VOLUMES



ESTIMATED 30TH HIGHEST HOUR VOLUME  
ON RT 77 AND TWO LIGHTS RD / RT 77  
DIRECTIONAL DISTRIBUTION 55/45 SB NB,  
TWO LIGHTS - 50/50, BROAD COVE 63/37  
LEFT / THROUGH / TURNING RIGHT.

DISTRIBUTION @ RT 77 - BROAD COVE

... 100% ...

**William C. Eaton, P.E.**  
Transportation Engineer/Planner

December 5, 1985

David A. Kamila, P.E.  
Vice-President  
Land Use Consultants  
17 Commercial Street  
Portland, Maine 04101

RE: Broad Cove Subdivision

Dear Mr. Kamila:

Per your request, I have reviewed and addressed the concerns of the Cape Elizabeth Police Department regarding the proposed intersection of Two Lights Road and Hunts Point Road, and the Cape Elizabeth Planning Board's question regarding the maximum length of a cul-de-sac street, specifically for the case of Channelview Road. Findings and recommendations are as follows:

o Sight Distance At Hunts Point/Two Lights Road Intersection:

Based upon the final site plan for the proposed Broad Cove Subdivision, the centerline of the proposed extension of Hunts Point Road to Two Lights Road was located at a point 50'± north of C.M.P. pole #26. Sight distance to the south was re-evaluated from a point 15' back from the edge of the pavement on Two Lights Road (this setback represents a worst case position for the exiting driver's eye), at a height-of-eye of 3.5'.

Photographs (see figures 1, A-C) were taken facing south along Two Lights Road. As can be seen, C.M.P. pole #26 does obstruct sight lines, but not in the critical 400-500 foot range (at 40-45 mph a distance of 415-465' is recommended). Vehicles approaching the proposed intersection, as shown in Figure 1A and 1B, are partially obscured by an embankment which begins approximately at C.M.P. pole #27. Because of the partial obscurement, plus the potential for total obscurement if grass and brush on the embankment are not cut, grading of the embankment, as recommended by the Cape Elizabeth

Police Department, is an appropriate action to guarantee sight lines.

With regard to relocation of C.M.P. pole #26, some discussion of setback is required. Typical setback for intersection sight distance is 15'+ to the driver's eye. This is a worst case situation, as the vast majority of drivers will stop closer to the intersection to improve their sight lines. In the case of a close and obvious obstruction, such as a utility pole (as opposed to the less obvious effect of the embankment) it is felt that drivers will proceed beyond the 15'+ setback to eliminate the obstruction to their view. Figures 2 A-C illustrate sight lines from a 13'+ setback. As can be seen, sight lines are excellent from this point, with only minor blockage caused by the embankment.

#### o Maximum Length of Cul-de-Sac Streets

Recommendations for maximum lengths of cul-de-sac streets are usually based upon the following considerations:

- o to minimize inconvenience to delivery vehicles (reduce backtracking);
- o long cul-de-sac streets with more than 20 dwelling units may result in use of driveways as a turnaround by vehicles mistakenly entering the street, rather than travelling to the end and using the cul-de-sac turnaround (Residential Handbook, Urban Land Institute, 1978);
- o emergency access for high density development (Recommended Guidelines for Subdivision Streets, Institute of Transportation Engineers, 1984).

Specific recommendations range from 400' to 1000', however, all sources reviewed generally relate the need for establishing a maximum cul-de-sac street length in low density development areas as a control on the maximum number of units or total traffic to be served by the street. Almost universally throughout the sources interviewed, the figures of 200'+ vehicles per day or 20+ dwelling units are specified.

In the document Performance Streets - A Concept and Model Standards For Residential Streets (Bucks County Planning Commission, Doylestown, PA, 1980), this universality of using cul-de-sac street length as a development control was discussed in detail. The Model Stan-

dard recommended essentially dispenses with maximum length standards and applies a performance based standard of 200'+ ADT (average daily traffic) or 20+ single family units. The Bucks County document argues that an ADT standard pre-emts the need to control cul-de-sac street length, since length restrictions are generally applied as a control on maximum development. With regard to "backtracking" of delivery vehicles, it is noted that two 1000' cul-de-sac streets have as much "backtracking" as a single 2000' cul-de-sac street. Proper signage using "Dead End" signs at the intersection of a cul-de-sac street can minimize or eliminate any vehicles entering by mistake.

Implicit in the performance-based standard of 200'+ ADT or 20+ units is recognition that there are physical and economic constraints on the actual lot layout in a subdivision. The 1000' maximum length standard for low-density development seeks to limit development to 20 units on the assumption of an average lot width of 100'. Use of a standard of 20+ units provides the flexibility required to address physical constraints and to allow creative lot layout, while still controlling total development. As such, the use of a limitation based on an appropriate level of development, 200+ ADT or 20+ units being most common, is preferable to establishing a maximum length for cul-de-sac streets.

#### o Recommendations:

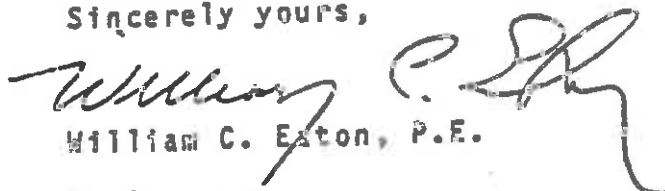
1. The embankment on the easterly side of Two Lights Road south of the proposed Hunts Point/Two Lights Road intersection should be lowered to provide improved sight distance. Grading should begin approximately at C.M.P. pole #27 and extend southerly until on-site inspection indicates that sight obstructions are eliminated. The relocation of C.M.P. pole #26 is not recommended; the minimal effect of this nearby obstruction can be entirely mitigated by vehicles pulling forward only 2 feet closer to Two Lights Road. Lilac bushes to the north of the intersection should be removed back to a point which guarantees adequate, safe sight lines. As with the grading of the embankment, this should be checked on-site during construction.

2. A performance standard rather than a fixed maximum length for cul-de-sac streets should be utilized. It is recommended that this standard be tied to the magnitude of development rather than traffic volume since this measure is less ambiguous. Maximum development recommended is 20+ single family units. There are

currently 10 single family units which have access on the existing Channelview Road. The proposed Broad Cove Development would create an additional 10 buildable lots and would fall within the recommended performance standard.

I hope the preceeding address your needs in these matters. Should you have any further questions or concerns, please contact me.

Sincerely yours,

A handwritten signature in dark ink, appearing to read 'William C. Eaton', with a stylized flourish extending from the end of the name.

William C. Eaton, P.E.

Enclosures

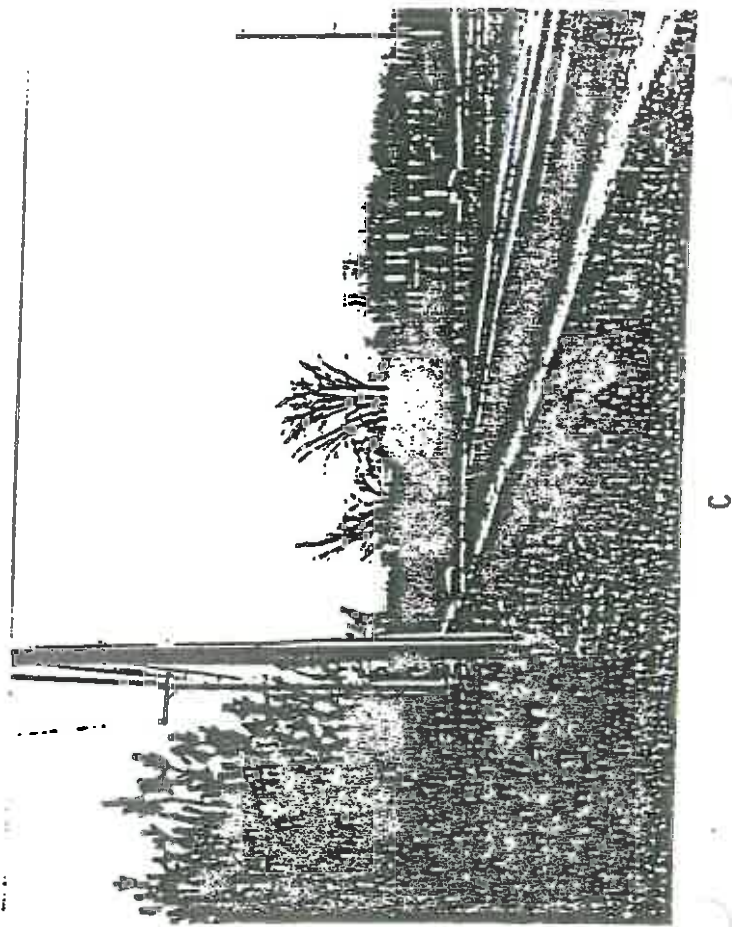
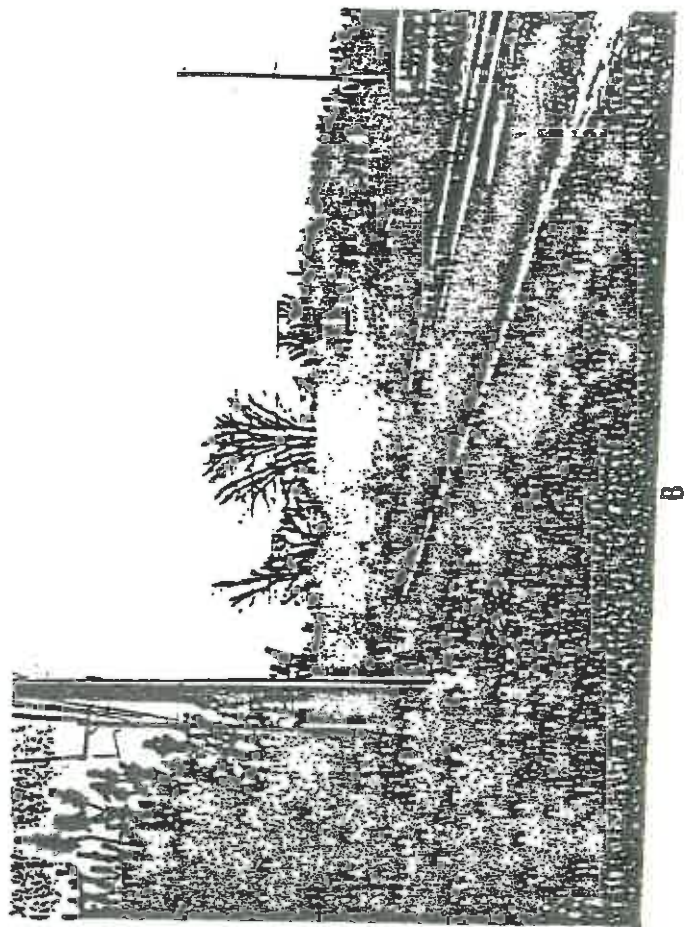
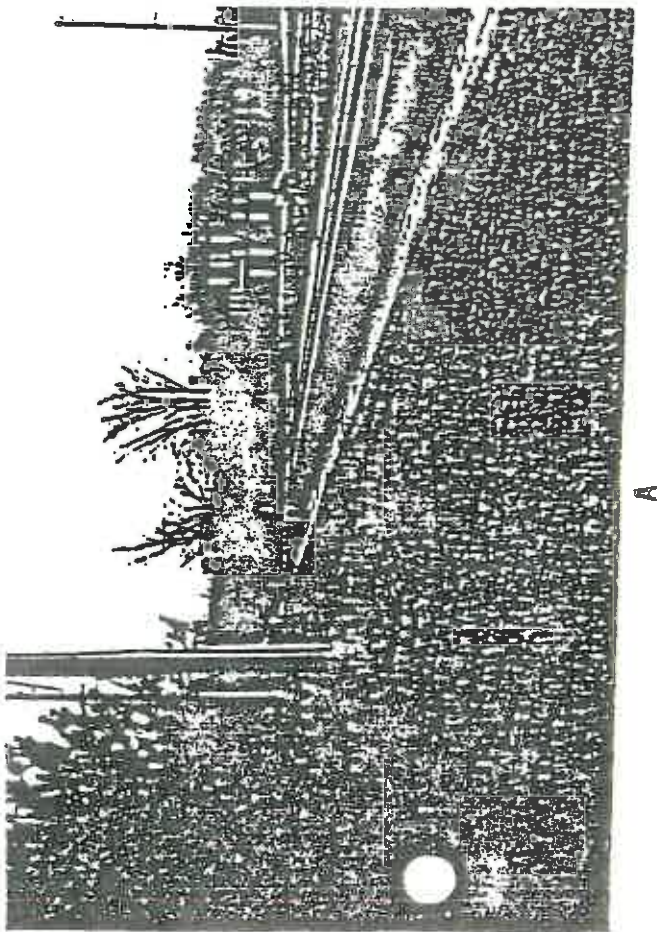
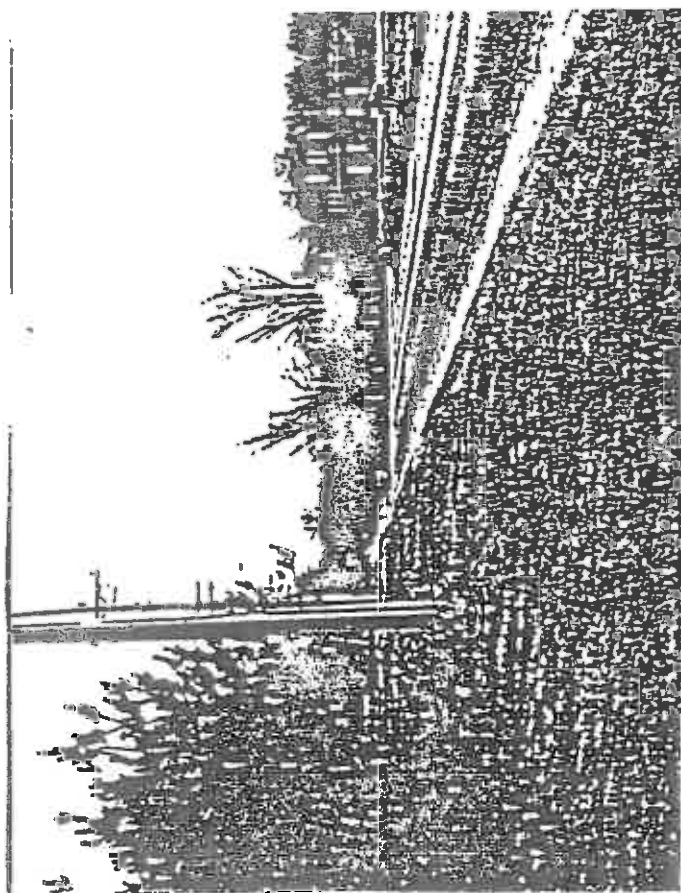
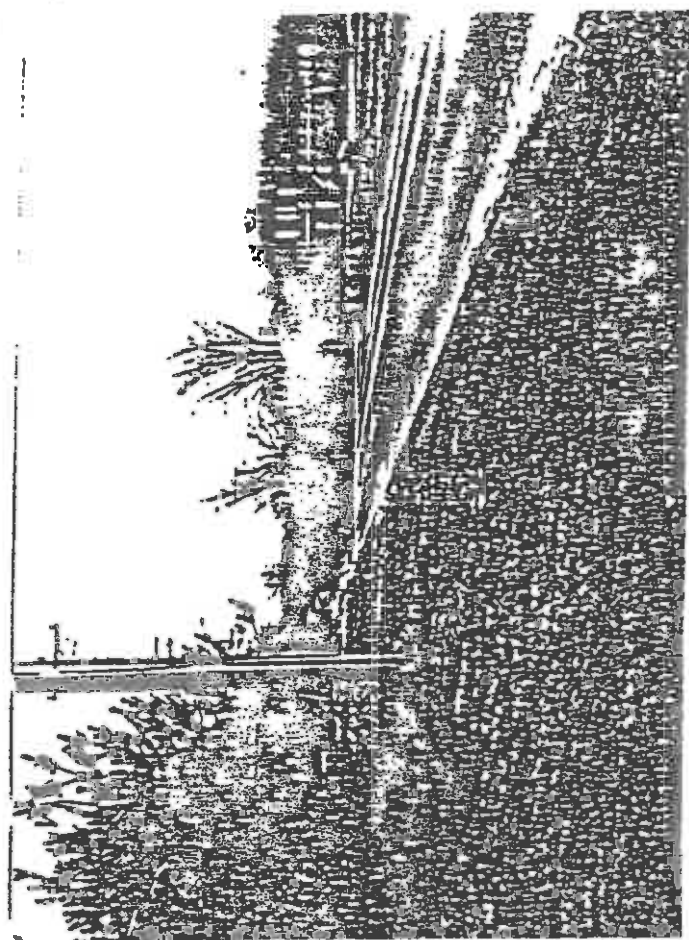


FIGURE 1, A-C  
15' Setback



A



B

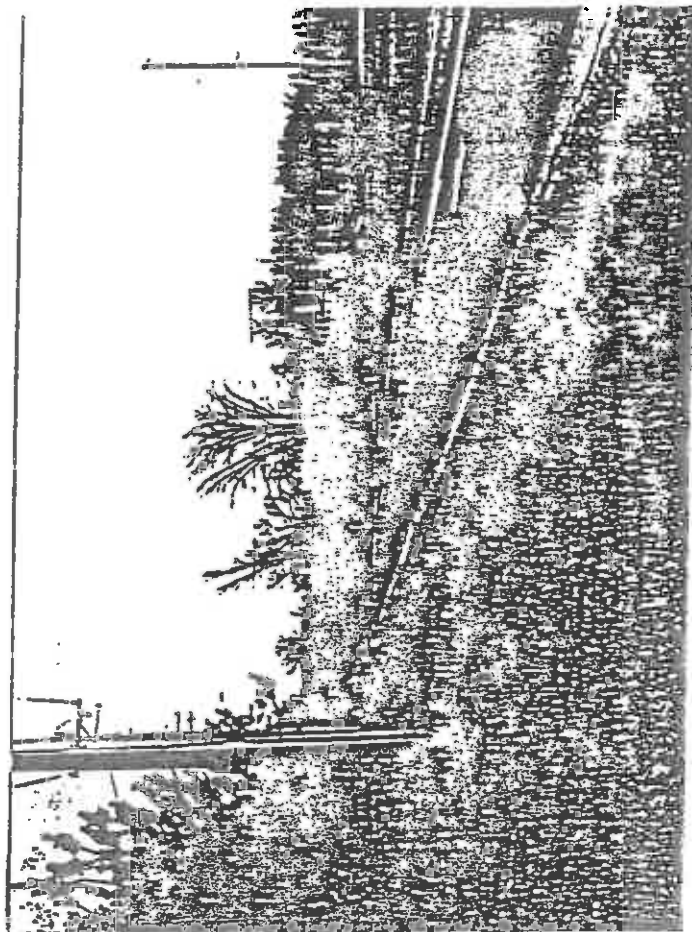


FIGURE 2, A-C  
13' Setback

July 26, 1989

Mr. Peter Kennedy  
49 Roaring Brook Road  
Portland, ME 04103

Re: Traffic Update: Broad Cove Subdivision

Dear Peter:

Pursuant to your request, I have updated the traffic issues associated the proposed Broad Cove Subdivision based upon the reduction in number of lots (24 toll) and the minor relocation of the Two Lights Road entrance. Summertime (peak) traffic data was collected, the site traffic was re-calculated based on the proposed number of lots, the intersection capacity computations contained in the 1988 Dufresne-Henery Inc. report were verified and the vehicle sight lines were re-measured based on the slight adjustment made to the Two Lights Road entrance.

Existing Traffic A manual turning movement count was taken at the Route 77/Broad Cove Road intersection on Friday, July 20, between the hours of 7:00 and 9:00 a.m. and 3:00 p.m. and 6:00 p.m. From the data, it was determined that during the p.m. peak hour (3:00 - 4:00 p.m.) the heaviest volume of traffic passes through the intersection. In accordance with M.D.O.T. traffic statistics during the months of July and August the "peak" 30th highest hour traffic condition occurs along most busy "recreational" routes. Depicted on Figure 1 are traffic volume data representing "peak" conditions estimated in 1985 by William Eaton and 1988 by Dufresne-Henery, Inc. (DH) and the actual "peak" volumes recorded in July, 1989.

You will note that the 1985 estimates by William Eaton and the July 1989 actual counts are quite similar, however a major difference exists between the 1988 D-H volumes and the 1989 actual data. This difference is best explained by the "time-of-year" that the field data was collected. The D-H field traffic counts were taken during the month of January and factored to summertime conditions, whereas the 1989 actual counts were taken during the "peak" summertime. Both previous reports if anything clearly over-stated actual traffic volume conditions.

Site Traffic Because you have significantly reduced the size of your project from 24 to 11 lots, the total number of site trips and the assignment of those trips were re-calculated. Based on the Institute of Transportation Engineers "TRIP GENERATION" figures the (11) lot subdivision will generate

Mr. Peter Kennedy

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(11) vehicles trips during the p.m. peak hour, with (7) trips entering the site and (4) leaving the site. Figure 2 illustrately presents the anticipated travel paths of the site generated traffic. Because of the subdivision layout nearly all trips will be made through the Two Lights Road entrance. However, Lots 5 and 6 will access directly onto Channel View Road to Broad Cove Road, therefore trips from these (2) lots were assigned to Broad Cove Road.

Capacity Analysis A capacity analysis of the Route 77/Broad Cove Road intersection was performed for 1989 "no-build" and 1989 "build" conditions. The following table summarizes that analysis:

<u>Movement</u>	<u>Existing Condition</u>		<u>Build Condition</u>	
	<u>Reserve Capacity</u>	<u>Level of Service</u>	<u>Reserve Capacity</u>	<u>Level of Service</u>
1. <u>Broad Cove Road</u>				
left-turn	248	C	243	C
right-turn	571	A	567	A
2. <u>Route 77 Southbound</u>				
left-turn	662	A	657	A

From the table it is clear that the added site traffic has minimal impact on the operation of the intersection and that the intersection approaches operate at a level of service well above the normal acceptable "Urban" condition. Based on the capacity computations above the results presented in the D-H report overstate actual operating conditions, however even when overstated all intersection(s) impacted by the proposed project operate above the accepted "Urban" arterial standard condition.

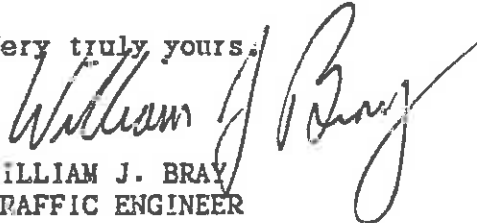
Vehicle Sight Lines I have re-checked available vehicle sight distance of the relocated Two Lights driveway and have concluded that the measured distances of 700± feet remain well above the desirable standard of 660 feet.

Mr. Peter Kennedy  
Page 3  
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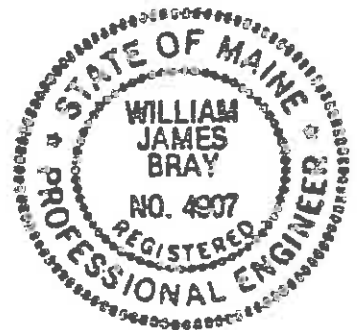
Conclusion Based on this update of previous traffic studies, I can safely conclude that both past consultants clearly evaluated a "worse-case" condition and that their report conclusions represent an accurate but overstated measurement of actual project impact.

If you require additional information, please contact me at 774-3603.

Very truly yours,

  
WILLIAM J. BRAY  
TRAFFIC ENGINEER

WJB/cmf



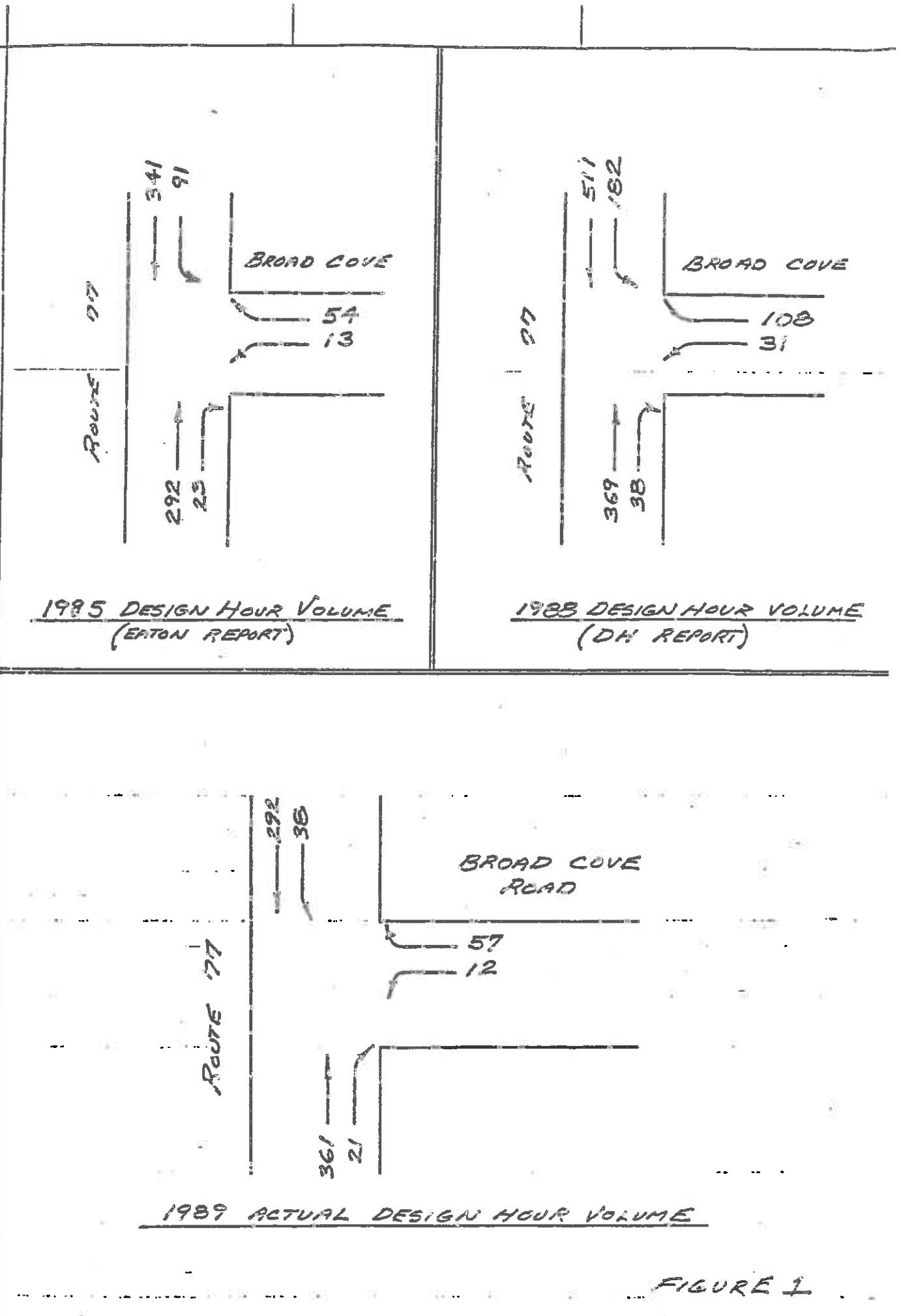
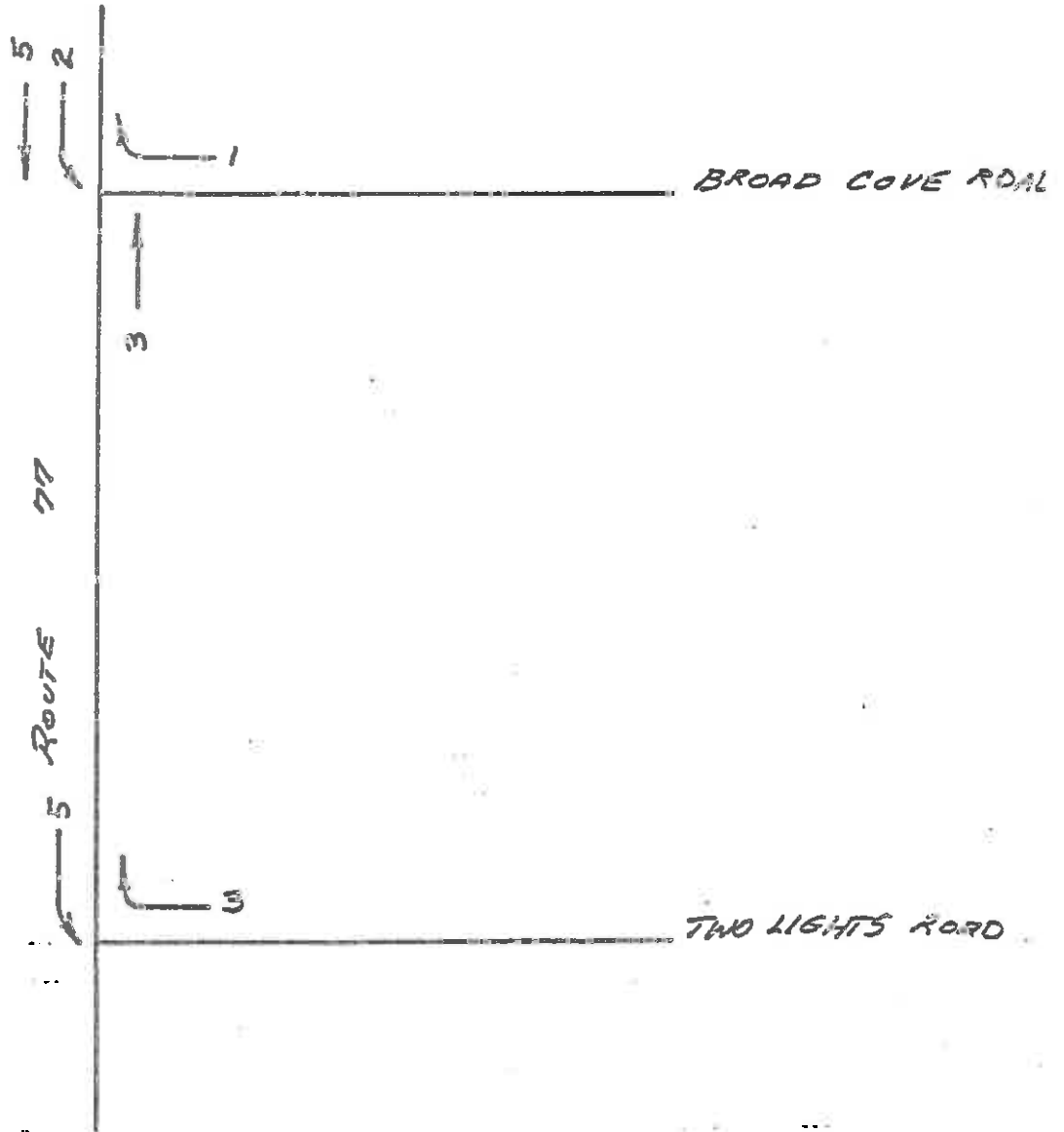


FIGURE 1

22-141 50 SHEETS  
22-142 100 SHEETS  
22-143 150 SHEETS  
22-144 200 SHEETS



ESTIMATED SITE TRAFFIC  
(PM PEAK HOUR)

FIGURE 2

WILLIAM J. BRAY, P.E.  
235 Bancroft Street  
Portland, ME 04102

August 29, 1989

Mr. Peter Kennedy  
49 Roaring Brook Road  
Portland, ME 04103

Dear Peter:

This letter responds to the four issues raised by Cape Elizabeth's Planner, Steven Butler, regarding your proposed Broad Cove Subdivision. It is my understanding that those issues consisted of the following:

- (1) Include correct number of lots in report;
- (2) Broad Cove Road;
- (3) Route 77 @ Two Lights Road intersection; and,
- (4) Traffic onto Two Lights Road at new intersection.

My July 26, 1989, letter was based on a proposed 11-lot subdivision; although the actual number of p.m. peak hour trips is doubled, assuming a 24-lot subdivision, the actual conclusions stated in my earlier report remain unchanged. The ITE "TRIP GENERATION" Manual estimates that a single-family detached dwelling will generate 1.005 trips in the p.m. peak hour. Applying those rates, the proposed 24-lot subdivision will generate 24 total trips in the p.m. peak hour. Fifteen (15) of the trips will enter the site, and 9 trips will exit the site during the critical p.m. peak hour.

To provide an accurate estimate of existing p.m. peak hour traffic volumes at the Route 77/Two Lights Road intersection, a manual turning movement count was conducted on Friday, August 18, 1989. The peak hour data previously collected at the Route 77/Broad Cove Road intersection on July 20, 1989, was combined and balanced with the data collected at the Two Lights intersection. Figure 1 illustratively presents the estimated 1989 Design Hour Volumes at both study intersections.

I have developed a "worse case" assignment of traffic that could potentially occur by constructing a "thru" road connection between Broad Cove Road and Two Lights Road. That assignment was prepared based on the following two assumptions:

- (1) 75 percent of existing right-turn in and left-turn out traffic at Broad Cove Road/Route 77 intersection assigned to new roadway on Two Lights Road; and,
- (2) 50 percent of existing right-turn out and left-turn in traffic at Broad Cove Road/Route 77 intersection assigned to new roadway via Two Lights Road.

Figure 2 depicts the 1989 "Base" traffic assignment, which assumes construction of the proposed connector roadway without the traffic generated by your development. The "Base" condition assignment assumes that 72 of the 137 total p.m. peak hour trips, presently traveling over Broad Cove Road, would be diverted to the new roadway onto Two Lights Road. Overlayed on Figure 2 (in parenthesis) is the assignment of the site trips based on application of the same above-stated assumptions. Based on the same traffic assignment assumptions, 17 of the total 24 site trips generated by the site will use the Two Lights Road access point.

A capacity analysis was performed at both study intersections for the existing roadway/intersection configuration and for the assumed "Build" condition. The following table presents the findings of the capacity analysis:

TABLE

CAPACITY SUMMARY

<u>INTERSECTION/MOVEMENT</u>	<u>EXISTING CONDITION</u>		<u>BUILD CONDITION</u>	
	<u>RESERVE CAPACITY</u>	<u>LEVEL OF SERVICE</u>	<u>RESERVE CAPACITY</u>	<u>LEVEL OF SERVICE</u>
1. <u>Route 77 @ Broad Cove Road</u>				
-- Broad Cove Road				
Left-Turn	248	C	245	C
Right-Turn	571	A	578	A
-- Route 77 Southbound				
Left-Turn	662	A	666	A
2. <u>Route 77 @ Two Lights Road</u>				
-- Two Lights Road				
Left-Turn	264	C	245	C
Right-Turn	585	A	558	A
-- Route 77 Southbound				
Left-Turn	643	A	619	A

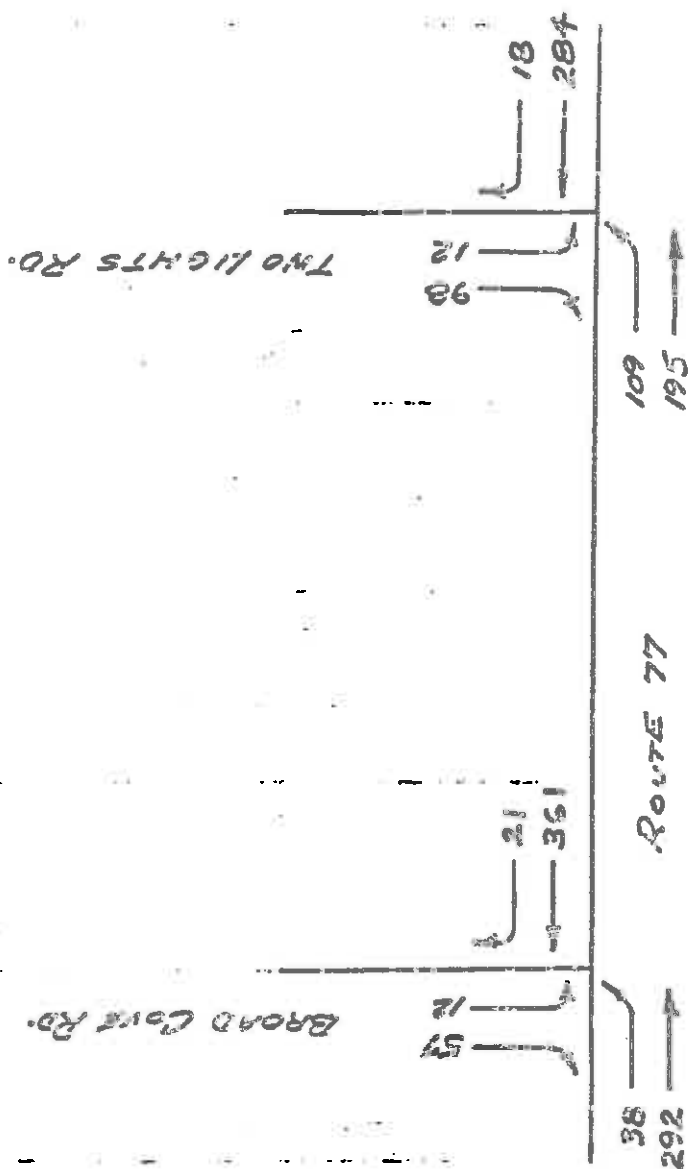
The above Table clearly demonstrates that both study intersections currently operate at or above acceptable "urban" standards; and, even under a "worse case" condition (construction of a connector road and added impact from your development), both intersections maintain acceptable Levels of Service.

In conclusion, the proposed project (24-lot subdivision), including construction of the connector roadway system between Broad Cove Road and Two Lights Road, will not negatively impact either of the two adjacent traffic intersections. In fact, both intersections currently operate at acceptable Levels of Service, and construction of the project will not affect that condition.

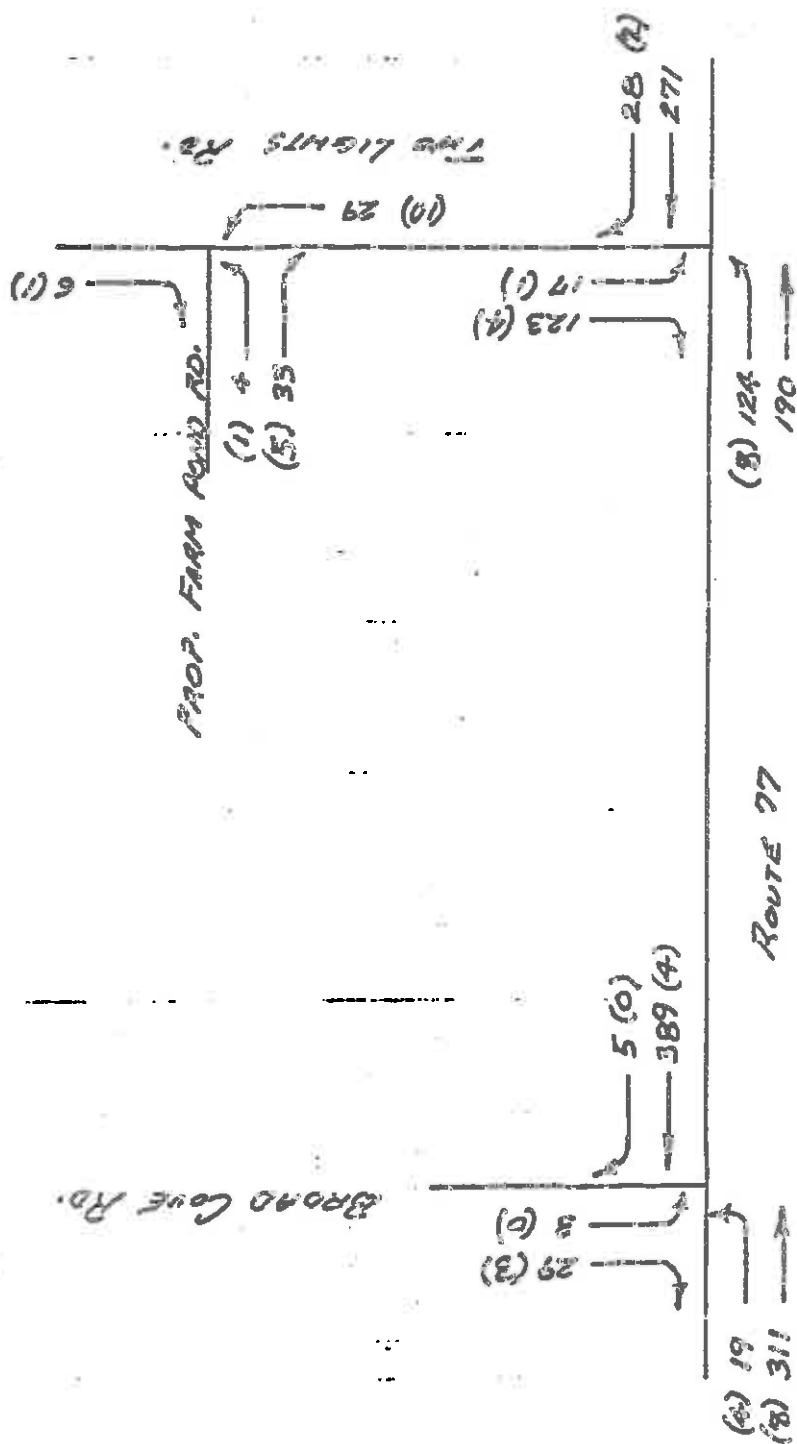
Very truly yours,

  
William J. Bray, P.E.

22-141 50 SHEETS  
22-142 100 SHEETS  
22-144 200 SHEETS



1989 DESIGN HOUR VOLUMES  
(PM PEAK HOUR)



RE-ASSIGNED 1989 "BASE" & SITE TRIP ASSIGNMENT

XX = RE-ASSIGNED "BASE" VOLUMES  
(XX) = SITE TRIPS

To: Marion Guthrie and Members of the Planning Board

From: Michael K. McGovern, Town Manager

Re: Attached Memorandum

Date: June 15, 1989

Attached is a memorandum regarding Broad Cove access. I read in your Planning Board packet that Peter Kennedy, the developer proposing Broad Cove Highlands, has asked to discuss the topic at your June 20, 1989 meeting. Unfortunately, I am unable to attend your meeting due to another commitment.

The issue is one with many views and I hope that you would make a final decision only after hearing from the developer, other municipal officials and from residents in the area. I also hope to have an opportunity to discuss the issue directly with you.

cc: Steve Butler, Town Planner  
David Pickering, Chief of Police  
Donald Webster, Fire Chief  
Robert Malley, Director of Public Works  
Peter Kennedy, Developer  
Gerald Daigle, Codes Administrator  
Town Council

To: Chairman Guthrie and Members of the Planning Board

From: Michael K. McGovern, Town Manager

Re: Access Road from Broad Cove to Two Lights Road

Date: June 15, 1989

As you know, I support a full access road extending from Broad Cove to Two Lights Road. In this memorandum, I shall try to set forth why I support a road being constructed if a subdivision is approved in the vicinity.

My rationale is based on four distinct points which I shall review in detail. They are:

1. Public Safety standards as contained in present ordinances as well as past incidents imply the need for a second access from a neighborhood.
2. Emergency only roads do not work over the long-term.
3. The history of the Broad Cove subdivision has always been premised on the belief that a full access road would be constructed.
4. Traffic will decrease in nearly all of Broad Cove.

### Public Safety Standards

In 1987, the Planning Board proposed and the Town Council adopted new Subdivision Regulations which state:

"The Board shall require that streets be designed so as to provide safe, convenient and attractive access from the subdivision to previously existing or proposed public ways which may include two or more means of access."

The Subdivision Regulations also provide in Sec. 16-3-2 (a) 9. that "in no instance shall a dead-end street exceed 1,000 feet in length and service more than 20 dwelling units." Broad Cove is essentially a 1.8 mile dead-end street with over 200 homes.

The original standard for dead-end streets was developed as a direct result of Planning Board discussion on March 19, 1970 regarding Farm Pond Road and Running Tide Road. Therefore, the intent of the legislative body in enacting this ordinance clearly was to stop further development in Broad Cove without another access. The excerpts of minutes of the Planning Board provided in attachment A provide back-up for this point. The actual minutes are available in the planning office.

Public Safety personnel over the years have also raised the safety issue. On March 28, 1973, Fire Chief K. Wayne Murray wrote to the Town Council:

"A few years ago I brought up the problem of Shore Acres and Broad Cove having only one means each of access. I was led to believe at the time that roads were to be built to alleviate this situation. As of this date not one thing has been done....I only bring this to your attention again in hope that something can be done to correct this problem other than some developer's false promises."

A second undated letter from Chief Murray, perhaps about 1976, again raises the issue and stated that "solution one was to have Mr. Balfour make a good gravel road from Farm Pond Road to Two Lights Road."

A third letter came from Fire Chief Charles F. Wilson in March 1978 to former Town Manager Quentin B. Spector. Chief Wilson wrote "Over the past few years, officials of this department have advised the Town that there is a serious problem with access and egress at both Shore Acres and Broad Cove. At a recent meeting of the Board of Fire Commissioners, they requested that the Chief go on record, again, regarding the department's position...With the values being high in both areas, and considering the life hazard in any residence, access is imperative."

There has also been concern from citizens over the years. I have received numerous phone calls in the past about this issue. In March of 1977, the Broad Cove Association went on record. Then President Richard Williams wrote to the Planning Board:

"Already, there is not another area in Cape Elizabeth where so many families are dependent on a single access road. In the fall of 1976, the Association took a census of our area. The census showed that there are one hundred twenty-four (124) households, and a population of five hundred twenty-seven (527); and, since the census was taken, the aforesaid numbers have increased. The potential for tragic consequences in the event of fire or other emergency is compounded each time a residence is added without further accessibility to the main road. Several accidents have occurred this winter because of the dangerous bend in Broad Cove Road and potential for such accidents will be magnified with each new residence. Additionally, the storms of this winter created a very dangerous situation when a sole car became stuck on the sole access road in and out of Broad Cove. In substance, the whole area was blocked and there was no other way for people to get to and from their homes.

We could go on at some length about the dangers, and I have not even mentioned the most dangerous situation of all, the dangers posed to the two hundred fifty-two (252) children living in the area. These dangers come from excessive traffic on an already overworked road system and large construction trucks barrelling down the road to get to new homes being built in the furthest portions of the area."

Just this past May 5th, a house fire at 24 Hunts Point Road closed off a part of Broad Cove from traffic for over 1 1/2 hours. During the sewer construction there were numerous lengthy hold-ups of traffic. A severe storm could cause other blockages. I could also list numerous other experiences we have had in Cape Elizabeth of an access being blocked.

It should also be remembered that access involves traffic both in and out. Broad Cove probably has more doctors per capita than any other neighborhood in Greater Portland. Their ability to get out to respond to emergencies effects public safety and welfare well beyond Broad Cove.

### Emergency Access Only Roads Do Not Work Over the Long-Term

The above point regarding doctors is a good transition to my next premise that emergency access only roads do not work over the long-term.

One problem with gated access points <sup>is</sup> ~~are~~ that they are often blocked, not maintained or a key is not readily available. Picture the doctor on his way to an emergency and he finds Broad Cove Road blocked. What will he find when he goes to the proposed gate beyond Hunts Point Road? Will he have to return home and call the police to come have them unlock it? Will they have an up-to-date key or will the police not have a key such as we recently went without a key for a gate in Cranbrook for over a year? Will the gate be blocked with a car such as shown in Attachment B at the emergency gate for Hobstone? Will the gate be blocked by a boat or a van such as shown in Attachment C at the emergency gate for Hobstone? Will the area be plowed?

Finally, will the road be like the current Farm Pond Road which was established as an emergency access by vote of the Planning Board and the Town Council in 1970? The Board and the Town Council had good intentions, but the road is impassible today. The action establishing this access road is also in Attachment A.

I believe the Hobstone, Cranbrook, Wildwood and Farm Pond Road are all examples of well-intentioned emergency access roads which do not work over the long-term.

### The Broad Cove History

Broad Cove has developed in several sections over the years beginning in the mid 1960s. It has always been the intent that the last phase would include another full access road out onto Two Lights Road.

In fact, the current subdivision plan approved by an earlier Planning Board plotted Farm Pond Road. The Running Tide Road section of Broad Cove was part of this subdivision plan as well. The record is clear that both the Planning Board and the Town Council approved lots on Running Tide Road with the understanding that Farm Pond Road would eventually be constructed. These plans have been available in the Town Office and at the Registry of Deeds since 1970 and everyone who has purchased land in the area should or could have been aware that the subdivision plan called for the road to be built.

The Hunts Point Road Subdivision plan also contemplated the construction of Farm Pond Road. The plan for the extension in effect when every lot on Hunts Point Road Extension was sold shows land left to serve as a right-of-way to Farm Pond Road.

Attachment "A" gives much more of the history of this issue.

### Traffic Will Decrease in Nearly All of Broad Cove

Some have said that traffic will increase in Broad Cove because of people driving through. In August and September 1988, we counted the traffic on Broad Cove Road near its intersection with Route 77. This showed average daily traffic of 1,885 vehicles or 8.56 vehicles per household. This is quite close to the 10 trips per household estimate traditionally utilized for planning purposes. Because of the circuitous rate of another full access road, Broad Cove would not become a through short cut to anywhere. It would be about a 1.2 mile additional detour from Two Lights Road to the Broad Cove/Route 77 intersection.

A variation of the short cut discussion is that sightseers will traverse the neighborhood in greater numbers. This argument is also rather flat because at the same time residents are commenting that there are already many sightseers. If there are some, their impact will be cut in half because instead of travelling over all the roads twice, they will only be travelling once. Even a doubling of sightseer traffic would therefore have a zero net affect. There is no reason to expect a doubling will occur because Broad Cove is not currently posted as dead-end and it will certainly not be posted as a through street. Furthermore, the Two Lights end will look residential which will serve to discourage traffic.

The impact of the new access road would reduce traffic on Broad Cove Road, Salt Spray Lane and on a portion of Hunts Point Road. The break point of traffic where there will be equal time distance to the Broad Cove/Route 77 intersection in either direction is on Salt Spray Lane just beyond Channel View Road. This is according to a study done about two years ago for the Broad Cove Highlands development.

All the traffic on Hunts Point Road, Masefield Terrace and Running Tide Road would therefore be likely to exit out the new road. With about 70 homes in this area, this would reduce the traffic count on Broad Cove Road and on Salt Spray Lane by about 600 vehicles per day. If Farm Pond Road was utilized as currently laid out, the only area that would have more traffic than the current would be the point on Hunts Point Road beyond which there are fewer homes than the space between this point and the intersection of Channel View Road and Salt Spray Lane. This is just about at the intersection of Winding Way and Hunts Point Road. It appears therefore that the only negative impact would be on Winding Way itself.

If a road went off Hunts Point Road Extension at some point, there would be more traffic on the extension with the break even point being the intersection of Hunts Point Road and Winding Way.

My conclusion on this point is that from a traffic impact point of view, all homes on Broad Cove Road and Salt Spray Lane would have a positive effect with a full access road. The only negative effect with a Farm Pond Road extension would be on Winding Way itself. The only negative effect with a Hunts Point Road extension outlet would be on the extension itself. I believe from a traffic point of view that the positive effects far outweigh any negative impact.

#### Conclusion

The construction of a full access road in the vicinity of Farm Pond Road should have been done 19 years ago. Ordinances now in effect as a result of the lack of an access road appear to require an additional access road if a further subdivision is to be approved. An emergency only access road would likely follow the pattern of other such roads and it would eliminate the opportunity to reduce traffic throughout most of Broad Cove.

I strongly recommend that no further homes be approved in Broad Cove unless a full access road is built extending to Two Lights Road.

ATTACHMENT A

Excerpts from Planning Board Minutes and  
Correspondence When Running Tide Road Area Was Approved

11/13/68 Planning Board Minutes

The Planning Board reviewed Alan Balfour's preliminary plan of the Raymond Jordan property. "Discussion was primarily concerned with... D) the need for other means of egress to the area"

11/27/68 Letter from Planning Board Chairman Richard Davis to Alan Balfour

"I have explained to you the changes which the Planning Board will require with respect to the preliminary plot plan for the Jordans Farm section of Broad Cove. They are as follows: ... 5. The Running Tide Road must be delineated and extended to the Two Lights Road. 6. Farm Pond Road should be extended southerly and other lateral extensions should be shown from the Running Tide Road as it extends westerly from Farm Pond Road."

3/20/69 Planning Board Minutes

"Mr. Balfour was further told that it was unlikely that his plan would be approved until an exit road to the Two Lights Road is set forth on the plan and completed in fact."

6/19/69 Planning Board Minutes

"Voted: That the final plot of the Jordan Farm Addition to Broad Cove be approved."

10/29/69 Letter from Town Manager to Planning Board Chairman. Attachments to this letter later added indicate that Jordan Farm addition was recorded in the Registry on 6/24/69 in Plan Book 79, Pg. 38, that the original Broad Cove was recorded on 6/29/64 in Plan Book 77, Pg. 39 and that certain other lots were recorded on 5/26/70 in Plan Book 83, Pg. 6 and on 7/18/69, Plan Book 77, Pg. 37.

12/4/69 Planning Board Minutes

"Special meeting called to discuss: 1) Connecting road between Broad Cove and Shore Acres proposed by Town Engineer." There was much discussion about this topic. The Town Engineer said "Also the Broad Cove situation will be relieved somewhat by completion of Farm Pond Road extending southerly toward Two Lights Road from the Hunts Point area of Broad Cove."

1/26/70 Letter from Planning Board Chairman Robert Hannigan to Louis Wood, Attorney for Alan Balfour.

"There have been times when confusion has resulted from lack of proper records pertaining to past Planning Board activity. It appears however this is not the case in our proceedings relative to the Jordan Farm section of Broad Cove." Mr. Hannigan then quoted from 12/12/68 minutes, 3/30/69 minutes and from 12/18/69 minutes. The 12/18/69 minutes read: "Voted that plot plan submitted by I. Alan Balfour not be considered until a bond for Farm Pond Road previously required by the Planning Board is posted and until the Plot Plan is submitted in accordance with Ordinance requirements."

1/29/70 Planning Board Minutes

"Mr. Hannigan showed original preliminary plans of Jordan Farm as approved, December 1967... Motion made and so voted that the plans of I. Alan Balfour as presented be approved. Chairman Hannigan complied and signed them as of this date 1/29/70."

2/29/70 Planning Board Minutes

Next on the agenda was a discussion of I. Alan Balfour's plan of Farm Pond Road. Richard Davis made a motion that the Planning Board advise the Council that on 6/19/69 when the Planning Board approved Mr. Balfour's final plans of Lots J30 thru J33 of the Jordan Farm section of Broad Cove, which plan has been recorded at Registry of Deeds, Box 79, Pages 36 & 38, that Mr. Balfour be required to construct Running Tide and Farm Pond Roads to Two Lights Road complete, or post an adequate bond before building permits be issued for these lots, all of which has been the Town practice and in accord with Town Ordinances. The reason for this being that the Planning Board did not want any additional house lots and buildings added to the Broad Cove development without another means of access to this area. In making this access a requirement, the Planning Board took into consideration the comments of Fire and Police Chiefs that they felt this access a necessity. All of this is well documented by minutes of meetings since 11/13/68 and various correspondence, including a letter to Mr. Balfour dated 11/27/68. Motion carried.

2/20/70 Letter from Town Attorney Charles Barnes to Council Chairman William H. Jordan.

"I understand that Farm Pond Road is again on the agenda for the next Council meeting. I wish to present briefly my view of the current status of that road under the applicable town ordinance.

On June 19, 1969 the Planning Board gave its approval to final plans including Running Tide Road, Farm Pond Road and four lots on the shore on Running Tide Road. On February 9, 1970, the Town Council accepted a bond for the conditional acceptance of Running Tide Road and that portion of Farm Pond Road connecting Running Tide Road to Hunts Point Road. The acceptance of that bond did, in my opinion, constitute conditional acceptance of Running Tide Road and the small segment of Farm Pond Road.

I understand that the Planning Board on January 29, 1970 approved preliminary plans presented by Mr. Balfour for the balance of 17 lots on Running Tide Road.

I also understand that last night, February 19, 1970 the Planning Board voted to advise the Council that, when the Planning Board on June 19, 1969 approved the final plan which is now recorded covering Running Tide Road and all of Farm Pond Road with the four shore lots, as a condition Mr. Balfour was required to construct all of those roads or to have them conditionally accepted with bond, running to Two Lights Road. This requirement does not appear upon the final recorded plan, as required by Section 7, B (2) (b).

Assuming however that the absence of such a requirement on the final plan is not fatal, Section 9, A of the subdivision ordinance provides, in its final sentence, that "if the builder constructs a portion of the street at a time, he may submit a bond for that portion together with its improvements." In other words he is permitted by the subdivision ordinance to have a subdivision road, which is shown upon the final plan, conditionally accepted in segments; this may be good planning, but the ordinance permits the builder to do so.

Therefore, granting that the Planning Board has the power to impose certain restrictions upon a subdivision under Section 5, A, it is my firm opinion that such restrictions must be within the framework of the ordinance and cannot properly contradict the express portions of the ordinance such as the provision permitting conditional acceptance in segments.

It is probable that the Planning Board would not have approved the final plans for Running Tide Road unless they felt that they could require Mr. Balfour to construct or post bond for all of Farm Pond Road. In my opinion, however, it is too late now to withdraw final approval as granted June 19, 1969. I believe that Mr. Balfour has already proceeded, incurred expense and otherwise taken action in reliance upon that final approval. Therefore at this point there appear to be two actions to be taken by the Town:

First, since Mr. Balfour cannot, in the present posture of the ordinance and the proceedings under it, be required to provide any additional portion of Farm Pond Road or bond for the same, his offer to post bond for initial construction of the road would seem to constitute a gratuitous offer; perhaps it should be accepted.

Second, I have already recommended to the Planning Board that they consider an amendment of the last sentence in Section 0, A.

The foregoing are my opinions and recommendations. The decisions to be made are for the Town Council and the Planning Board. I would hope that my opinions and recommendations would be adopted, but I realize that there are two side to these questions and I will endeavor to uphold actions by the Council and/or the Planning Board whether they follow my opinions or not."

Charles P. Barnes II

2/25/70            Town Council Meeting Minutes

"Moved and seconded Mr. Balfour give a surety corporate bond of \$7,000 for completion of a gravel road from the development for which the Council approved a bond at the last meeting out to Two Lights Road, to be completed by September 30, 1970... So voted."

3/19/70    Planning Board Minutes

"The Board directed the Chairman to ask Town Attorney to redraft Section 9 (A) (B) and (C) of the subdivision and street ordinance in such a manner as would prevent a recurrence (sic) of the situation just experienced wherein the Planning Board finds itself without authority to enforce its mandate. Furthermore, the Board requests an amendment to the Subdivision Ordinance that would require 2 means of egress to areas under development.

ATTACHMENT C

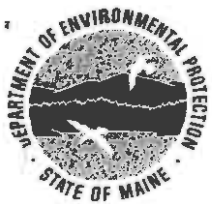
WILDWOOD EMERGENCY ACCESS



ATTACHMENT B

HOBSTONE EMERGENCY ACCESS  
(With Car in Background)





STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
STATE HOUSE STATION 17  
AUGUSTA, MAINE 04333

Technical Services Review Memorandum

To: Linda Kokemuller, Project Analyst

Date: 3-13-90

From: Melissa Evers, Biologist *ME*

Site Unit, Portland

Technical Services Unit

Subject: BROAD COVE SUBDIVISION, Cape Elizabeth

A biological review of this application has been completed to determine the project's potential impact on wetland quality. This review determines the adequacy of information provided to control various factors that could influence the wetland such as; land use changes, stormwater runoff, temporary sources of erosion during construction, permanent sources of erosion, and areas that alter water flow patterns. Another important consideration is the maintenance of native vegetative buffers to provide riparian habitat to enhance wildlife functions.

On the whole I thought this project used space well to minimize impacts on the wetlands and preserve open green space that will benefit people and wildlife. Approximately 0.40 of cumulative acreage of wetland will be filled for roads and driveways as a result of this project, while 13.37 acres of delineated Wetland A will be preserved in a land trust. The developers have attempted to minimized wetland impacts by avoidance and wetland set backs on individual lots.

A discrepancy exists between Wetland Map 2 and the Site Plan. Two wetlands identified on the Site Plan, lots 8 and 9, are not mapped on Wetland Map 2.

**BUFFERS, SET BACKS, AND CLEARING LIMITS**

Exhibit 29 refers to a proposed 30 foot property line perimeter buffer on the Site Plan that functions as a visual buffer between this subdivision and adjacent subdivisions. Additionally minimum structure set backs are delineated on the Site Plan. These buffer and set back requirements are not specifically designed to mitigate the impact of development on wetland functions.

To maintain and enhance the existing wetland functions the design should incorporate undisturbed wetland buffer zones, clearing restrictions, and greater setbacks. Wetland buffer zones help to maintain existing wildlife functions since the wildlife corridor value is strongly correlated to the upland edge. Clearing restrictions that maintain native vegetation and riparian habitat are beneficial to wildlife. Increased stormwater runoff may affect wetland quality. For this reason it is important to maintain native vegetation on lots (as recommended by consultants in Exhibit 32) and minimize land use alterations that increases stormwater runoff to wetlands.

The information presented in the Wildlife Report reinforces the need for clearing restrictions and buffer zones to protect wetland functions. The Report states, "An important function of protected wetlands,...is providing wildlife corridors. These corridors should be uninterrupted bands of undisturbed vegetation...". The upland edge is an important component of wildlife corridors. The report further recommends, "To help mitigate development of the house lots, existing vegetation should be left between building lots as much as practicable to maintain wildlife habitat. Apple trees in particular should be left...Protection of the wetlands and wildlife corridors will perpetuate the most valuable habitats on the site." These recommendations should be incorporated into deed restrictions to insure they are followed.

I recommend the following issues be addressed with reference to appropriate deed restrictions:

1. Clearing restrictions on individual lots that would be oriented to wetland riparian protection.
2. I recommend a 100 foot structure setback from the wetland to protect wetland functions.
3. Establish a buffer zone from the wetland boundary. I recommend a 75 foot zone for water quality protection. Clearing restrictions could also be instituted within this zone. A limited cut buffer zone and structure set backs conforms with the new Shoreland Zoning Ordinances (that includes wetlands) towns will adopt in 1991 or sooner. This enhances the edge effect of riparian habitat so important to wildlife.

#### WETLAND PRESERVATION

In Exhibit 32 the consultant assesses the habitat of this proposed subdivision and recommends various guidelines to preserve these attributes. Wetland B is rated high for wildlife breeding and migration. This wetland also contains the rare plant, fringed gentian. Given this attribute I concur with the conclusion, "Preservation of the wetland should also ensure the survival of this species." I recommend this wetland, or a portion of it, be put in a conservation easement to effectively protect its' functions and values.

The evaluation is as follows:

<u>Functions and values</u>	<u>Effectiveness</u>	<u>Opportunity</u>
Ground Water Recharge	low	N/A
Ground Water Discharge	moderate	N/A
Floodflow Alteration	moderate	moderate
Sediment Stabilization	moderate	N/A
Sediment Retention	high	moderate
Toxicant Retention	high	low
Nutrient Removal/Transport	moderate	high
Production Export	moderate	N/A
Aquatic Diversity/Abundance	moderate	N/A
Gen. Fresh Water Fish Habitat	low	N/A
Wildlife (Breeding)	high	N/A
Wildlife (Migration)	high	N/A
Wildlife (Wintering)	low	N/A

The wetland ranked high for wildlife during the breeding and migration seasons. Passerine birds and signs of deer and ruffed grouse were directly observed. The low ranking during the winter season was based on the absence of dense evergreen growth to serve as a deer wintering area. The low ranking for fresh water fish reflected the lack of contiguity to large, deep open water bodies. Ground water recharge also ranked low, as is typical for Maine's wetlands. The wetland rated high for sediment and toxicant retention effectiveness. Based on the suburban/agricultural character of the watershed, the wetland ranked high for nutrient retention opportunity, moderate for sediment retention opportunity and low for toxicant retention

with pink flagging. Fringed gentian is listed in the Watch List (WL) category on the "Official List of Maine's Plants that are Endangered or Threatened and List of Plants that are of Special Concern or that belong on the Watch List". It is extant in 21 locations in Maine and has been found at 26 locales including historical sightings. Although it has not been previously reported from Cape Elizabeth, it is listed in the surrounding towns of Falmouth, Portland and Scarborough. Its typical habitat is meadows and moist thickets. Protection of the wetland should also preserve this species.

One sedge was found in the Deerfield loamy sand on the northern (Phase II) parcel. The battered remains of one fertile culm was present, but not enough for a positive identification. However, the plant was 12 inches tall, on the bottom end of the size range of the species. The associated species do not match those listed as typical associates (Rawinski, 1987). Therefore, we feel quite sure that this is not variable sedge.

#### 4.0 CONCLUSION

One rare species, fringed gentian, was found at the site. Eleven plants were located along a foot path at the eastern end of the Phase I parcel, at the upland/wetland boundary. Preservation of the wetland should also ensure the survival of this species.

redstart, northern cardinal, rufus-sided towhees, chipping sparrows, song sparrows, white-throated sparrows, house finches, and American goldfinches.

Small mammals in the wooded area include short-tailed shrews, hairy-sided moles, eastern chipmunks, gray squirrels (Sciurus carolinensis) and meadow voles.

Again, the larger mammals previously mentioned utilize this area as part of their home range.

#### 4.0 DISCUSSION

The habitat found on the site are commonly found throughout southern Maine. The property is an abandoned farm which would, if left undisturbed, pass through successional stages to become a mature hardwood forest.

The wetlands, particularly the red maple swamp which encompasses the northern border of Phase II, are the most valuable wildlife habitats on the site. These areas should be protected completely. The only activities commonly allowed in wetlands are road crossings where required by the site. That exception will not be detrimental on this site as it is laid out.

An important function of protected wetlands, aside from their habitat value, is providing wildlife corridors. These corridors should be uninterrupted bands of undisturbed vegetation which provide cover for wildlife to move within and through the site. Wetland A, which encompasses the entire north and east portions of Phase II provides that function perfectly for that section of the

property. Animals can pass undisturbed throughout the large wetland which extends off the property to the east and west. Wetland B, which extends along the entire southern border of Phase I, serves the same function for that section of the property.

To help mitigate the development of the house lots, existing vegetation should be left between building lots as much as practicable to maintain wildlife habitat. Apple trees in particular should be left and pruned to encourage fruit production.

#### 5.0 CONCLUSION

Development of the Highlands at Broad Cove in Cape Elizabeth will not have an unreasonable effect on wildlife. The unavoidable alteration of habitat for development of house lots will change the species distribution but will not eliminate any populations. The protection of the wetlands and wildlife corridors will perpetuate the most valuable habitats on the site.

**SQUAW BAY CORP**  
Consulting Engineers



P.O. BOX 192, CUMBERLAND CENTER, ME 04021 (207) 829-6994

**PRINCIPALS:**

Robert D. Arsenault, P.E.  
W. Scott Decker, P.E.  
John R. Kennedy, P.E.  
Peter B. Tubbs, P.E.  
David W. Young, P.E.

June 26, 1990

Mr. Bob Moore  
Maine Department of Environmental Protection  
Bureau of Land Quality Control  
State House Station 17  
Augusta, Maine 04333

RE: The Highlands at Broad Cove Subdivision  
Cape Elizabeth, Maine

Dear Mr. Moore:

I have been asked by Mr. Peter Kennedy (President, Greater Portland Development Group) to review your memo to Linda Koke-muller concerning the referenced project's impacts on wetlands, and to respond accordingly.

First and foremost, it must be understood that the Town of Cape Elizabeth requires, as a condition of project approval, that there be a second means of access to the Broad Cove area. As Planning Board member Richard Tinsman stated, the Town Council has instructed the Planning Board to not approve future subdivisions in the Broad Cove area until the second means of access is assured. So your statement that there will be a "significant amount of fill and wetland habitat destruction to give three houses access to the existing subdivision" is not entirely correct. Due to the configuration of the Applicant's two parcels of land, crossing the wetland in Phase I is the only practical means of providing this secondary means of access on the Applicant's parcel. We have investigated alternative means of access including the acquisition of adjoining properties, and have determined that this is the only feasible alternate/secondary access for the area.

The Applicant has worked closely with the Cape Elizabeth Planning Board to provide measures which will mitigate the impact that construction of the through road will have on the wetland. The Planning Board has granted the following variances to the Town's standard typical roadway section. The variances apply to sections of roadway which cross wetlands.

Mr. Bob Moore  
June 26, 1990  
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turbed are ranked "low" in accordance with federal guidelines for ranking of wetlands and the disturbance does not impact the wetlands functions.

In summary, I would like to stress that the Applicant has cooperated fully with Town planning and public safety personnel. In view of the fact that from a practical standpoint the subdivision cannot be approved unless the service road crosses a section of wetland, the minor disturbance of a low value wetland is insignificant compared to the increase in protection of life and property provided by the through road. Please consider this in your review of this project.

Please feel free to call me if you have any questions.

Very truly yours,

SQUAW BAY CORP

  
W. Scott Decker, P.E.  
Principal

WSD/kal

cc:   
Peter Kennedy

Mr. Bob Moore  
June 26, 1990  
Page 2

<u>Item</u>	<u>Town's Ordinance</u>	<u>Approved Variance</u>
Roadway sideslopes	5:1 H to V	3:1 H to V
Width of border strip	10 feet	3 feet
Width of paved travel lanes	2-12 foot lanes	2-11 foot lanes

Also public testimony by the local fire and police chiefs indicates that for public safety reasons the road should be wide enough for vehicles to pass.

A statement from Robert Hunter (Town Engineer) indicates that he would not recommend but would not disapprove a reduction in pavement width from 24 to 22 feet (see attached letter dated March 12, 1990).

As you pointed out in your letter, the proposed roadway does not follow exactly the alignment of the existing dirt road through the wetland. I have discussed this with Mr. Kennedy and he has agreed to have the dirt road located by survey and we will redesign the horizontal alignment of the proposed road to align it with the existing road through the wetland. This realignment will significantly minimize the area of wetland to be disturbed.

Also, the wetland to be disturbed is not considered to be of significant value. Eco-Analysts personnel have been to the site on numerous occasions and have prepared the following study reports:

"Report on the Wetlands of the Broad Cove Property, Cape Elizabeth, Maine",

"Vegetative Characterization and Rare Plant Search of the Highlands at Broad Cove Property in Cape Elizabeth, Maine", and

"Wildlife Report for the Highlands at Broad Cove, Cape Elizabeth, Maine".

I have included copies of these reports for your review. Eco-Analysts personnel have concluded that "development of the Highlands at Broad Cove in Cape Elizabeth will not have an unreasonable effect on wildlife." The wetlands proposed to be dis-



5 FUNDY ROAD, FALMOUTH, MAINE 04105, TELEPHONE (207) 781-4753, FACSIMILE (207) 781-4753

August 8, 1990

Mr. Stephen Butler, Town Planner  
Town Office  
Ocean House Road  
P. O. Box 6260  
Cape Elizabeth, Maine 04107

Subject: The Highlands at Broad Cove

Dear Mr. Butler:

We are in receipt of the revised plan set and accompanying correspondence dated August 3, 1990 that illustrates the proposed roadway modifications to Phase I of the Highlands project. The modifications were dictated by the desire of the Department of Environmental Protection to minimize wetlands impacts.

The proposed modifications would require Jordan Farm Road to be dead ended as a public way about 700 feet easterly of Two Lights Road. This road would service three lots. A "Tee" type of turn-around is illustrated at the terminus.

A gravel surfaced emergency road is proposed from the terminus of Jordan Farm Road extending easterly about 800 feet where it will connect with the proposed private access drive that serves Lots 4, 5 & 6. This private access drive runs easterly about 1200 feet to connect with Winding Way Road. Gates are proposed at the terminus of Jordan Farm Road and at the end of the private access drive to prevent through traffic. The emergency access drive would be 12 feet wide, while the private access drive would be 16 feet wide.

The stated intent of the DEP in requiring the changes is the preservation of a small amount of wetland. While this may be a desirable goal, it can be seriously questioned whether the negative impacts on the health and safety of the residents in Broad Cove are a reasonable trade-off. The position of the Town Engineer has long been to the effect that a reliable, year round second vehicular entrance into the Broad Cove neighborhood should be provided to allow quick response of emergency vehicles should Broad Cove Road be blocked. This position has been supported by police and fire officials.

While the provision of the gravel road as proposed may provide some potential emergency access, it does not, in our opinion, meet desired criteria for a reliable year round access. As now configured, the emergency access would be via 2000 feet of gravel surfaced roadway that is too narrow for emergency vehicles such as fire trucks to pass. This length of access where it is not possible to see from one end to the other is recommended to be traveled way be a minimum of 20 feet in width. In addition, sufficient shoulder or cleared area should be provided to allow safe storage of the winter snow to provide reliable access this roadway should be kept plowed through the winter.

August 8, 1990

The plans illustrate the emergency access and the private access drives to be constructed with 12 inches of gravel with no surface treatment. This is not adequate to support heavy emergency vehicles, especially during the spring "mud season". With the ground water conditions in the area this roadway could be impassable for 4 to 6 weeks each spring. To provide year round access the emergency road should have a minimum of 24 inches of gravel, and should be designed with underdrains where required to maintain stability of the gravel.

The alternative alignment of the emergency access would result in about 1100 LF of roadway connecting Jordan Farm Road to Hunts Point Road. This would avoid using the private access to Lots 4, 5 & 6. The observations made in the forgoing paragraphs would also apply to the alternative alignment. We would have no great preference for one alignment over the other, as long as the criteria for reliable, year round access is met.

It should be pointed out that if the minimum recommendations for emergency access were adopted, the difference in impact on wetlands between the original design and the modified design would be very slight, and in our view, not really meaningful.

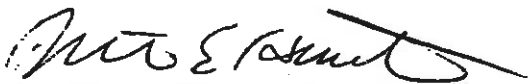
Town policy has been to provide a full circular cul-de-sac at the permanent terminus of all dead end roads. Tee type turn-arounds are normally used only as temporary measures. To facilitate plowing and maintenance it is recommended that the Farm Pond Road terminus be a full cul-de-sac as provided in the ordinance.

The developer proposes to connect the water main in Jordan Farm Road to either Winding Way or to Hunts Point Road, depending on the routing selected for emergency drive. We would concur that this looping connection should be made.

Please advise if you have questions, or would like to discuss any elements of this report in more detail.

Sincerely,

T. Y. LIN INTERNATIONAL



Robert E. Hunter, P.E.  
Vice President

REH/11h

JN: 50001.00



# TOWN OF CAPE ELIZABETH

TOWN HALL  
P.O. BOX 6260  
320 OCEAN HOUSE ROAD  
CAPE ELIZABETH, MAINE 04107

December 13, 1990

Linda Kohemuller  
Environmental Specialist  
Bureau of Land Quality Control  
Department of Environmental Protection  
312 Canco Road  
Portland, Maine 04103

Re: Highlands at Broad Cove Subdivision

Dear Linda:

Following up on our conversation, the Town of Cape Elizabeth would like to comment on the draft DEP Order on the review of the Highlands Subdivision. The Planning Board has not granted final approval to the plan, nor has the Town Council acted upon any acceptances, however, our concerns at this time include:

1. Emergency Access Road. The priority for the town in reviewing this project has been to establish a second access to the Broad Cove neighborhood. The draft order has limited access to an emergency basis on an 18' wide gravel road. Town road standards require a 24' wide road. More importantly, all town accepted roads are paved. Most of the private emergency access roads in town are also paved. The town must be responsible for maintenance of the emergency access road to protect the public safety of the neighborhood. Town acceptance of a gravel road requires the town to assume the costs for a separate gravel road maintenance program and substantially differs from town standards and practice.

At a minimum, the town requests that the draft order be modified to allow the emergency access road to be paved. The base construction of a paved road does not impact the adjacent wetland more than the construction of a gravel road. The Town Engineer has suggested rather that a gravel road may require more of a base to support heavy fire equipment during the Spring thaw.

We have also discussed the impact of a paved road on the rural character of the site. In a citizen survey done for the recently adopted Comprehensive Plan, rural character was identified as the most important element of the town. As noted earlier, all town roads are paved. The rural character of this site will not be impacted by a paved road, but rather by the degree of development of the area.

2. Adjacent roadway widths. The draft order limits Jordan Farm Rd and Farm Pond Rd to 20 feet wide. The town requests that both roads be a minimum of 24 feet wide or, as an alternative,

22 feet wide with curbs, which conforms to town standard.

3. Emergency Access maintenance. Item 6 states that the Town of Cape Elizabeth will be responsible for maintaining the emergency access road. The Cape Elizabeth Town Council is the policy body responsible for accepting town roads.

4. Pedestrian Access: Under items 10, 13, and 15, public footpaths and pedestrian access easements are referenced. The Town is currently discussing with the applicant the relocation of existing trails which the development will displace. We request that the draft order be modified to allow the clearing of new footpaths to replace existing trails. The Town Conservation Commission is currently implementing a Town Greenbelt Plan which includes these trails. In addition, the Commission would prefer to limit pedestrian impact on sensitive natural areas by guiding the public on trails rather than experience haphazard pedestrian access.

Thank you for providing this opportunity to comment on the draft order. Please let me know if you have any questions or comments.

Sincerely,

*Maureen O'Meara*

Maureen O'Meara  
Town Planner

cc: Michael McGovern, Town Manager  
Robert Hunter, Town Engineer  
Peter Kennedy



## **Town of Cape Elizabeth Traffic Calming Policy**

The Traffic Calming Policy represents a commitment by the Town of Cape Elizabeth to promote and maintain safety and livability. This policy provides a process for identifying, evaluating and addressing undesirable traffic conditions. The policy provides procedures for town staff to follow and an open process for citizen participation.

### Procedure for request for Traffic Calming

1. To initiate a request for traffic calming, a citizen must submit in writing to the Cape Elizabeth Police Chief, or designee, a request to evaluate a road for traffic calming per the Traffic Calming Policy. The request shall include the citizen's address, daytime phone number, and the street/intersection to be studied. The citizen may also provide his/her assessment of the area contributing traffic that may require calming.
2. Upon receipt of the written request, the Police Chief shall schedule a speed study to be conducted by the Police Department for the area. A summary of the speed study shall be prepared and shared with the initiator of the request.
3. If the speed study indicates that average speeds do not exceed 5mph above the posted speed limit, then the initiator and the Police Chief shall review the implementation of **Passive Traffic Control Measures**.

Arterial, Collector, and Rural Connector Roads are intended to efficiently move automobile traffic and therefore are only eligible for Passive Measures, and only if the average peak hour speeds exceed 5 mph over the posted speed limits. These roads are: Route 77, Mitchell Road, Shore Road, Scott Dyer Road, Sawyer Road, Wells Road, Two Lights Road, Fowler Road, Old Ocean House Road, Charles E. Jordan Rd and Spurwink Ave.

If the speed study indicates that average speeds exceed 5 mph above the posted speed limit, the Police Chief will identify the neighborhood impacted by possible standard traffic control measures. The initiator may then elect to collect the signatures of a minimum of 51% of the households in the neighborhood that are in favor of traffic calming measures.

4. If less than 51% of the households agree that traffic calming measures are needed, then the initiator and the Police Chief shall review possible implementation of **Passive Traffic Control Measures**.

If 51% or more of the households in the neighborhood agree that traffic calming measures are needed, the Police Chief will conduct a traffic volume study.

5. If the volume study indicates a traffic count of less than 100 cars during the peak hour, the Police Chief and the initiator, in collaboration with the neighborhood, shall review possible implementation of **Passive Traffic Control Measures**.

If the volume study indicates a traffic count of 100 or more cars during the peak hour, the Police Chief shall determine if a school zone or pedestrian generator or a sidewalk is present.

6. If there is no school zone or pedestrian generator, or there exists a sidewalk, the Police Chief and initiator, in collaboration with the neighborhood, shall review and implement **Standard Traffic Calming Measures**.
7. If there is a school zone or pedestrian generator or lack of a sidewalk, the Police Chief and initiator, in collaboration with the neighborhood, shall review implementation of **Physical Alteration Traffic Calming Measures**.
8. The initiator, in collaboration with the neighborhood, shall obtain signatures for at least 75% of the households in the neighborhood supporting the proposed **Physical Alteration Traffic Calming Measures**. All households fronting on proposed **Physical Alteration Traffic Calming Measures** must be included in the 75% supporting installation of the **Physical Alteration Traffic Calming Measures**.

If support of less than 75%, or support of less than all households fronting on proposed Physical Alteration Traffic Calming Measures is obtained, the Police Chief and initiator, in collaboration with the neighborhood, shall review and implement **Standard Traffic Calming Measures**.

8. If 75% or more of the neighborhood support **Physical Alteration Traffic Calming Measures**, the Town Council will consider the proposed alterations and may hold a public hearing prior to voting to consider approval. If not approved by the Town Council, the Police Chief and

initiator, in collaboration with the neighborhood shall review and implement **Standard Traffic Calming Measures**.

### Passive Traffic Control Measures

Passive measures include educational methods and police enforcement. No minimum criteria must be reached to be eligible for this level. Some examples of measures that can be taken under this level are as follows:

1. Police enforcement. Periodic radar enforcement.
2. Speed notification sign board. This device displays a motorist's speed as they approach the sign board in an effort to educate the driver that their speed might be inappropriate and to raise driver consciousness of their travel speed.
3. Neighborhood mailings. A letter sent from the Town to all of the residents of the road or neighborhood asking for their assistance to help control the speed that they travel in the neighborhood.
4. Adopt-a-Cone. This is a voluntary program for the citizens of Cape Elizabeth who are in an area where speeding is habitual. Each volunteer resident will be issued a traffic cone and asked to place that on a designated spot on the roadway in front of their residence thus bringing attention to a passing driver to please slow down. The volunteer places the cone out in the morning and brings the cone back in before dusk. The volunteer stores the cone at their residence until the end of the program. The program will be in operation between May 1 and October 31 of each year.
5. Evaluation for pedestrian and/or bicycle safety improvements.

### Standard Traffic Control Measures

Standard measures are traffic organization and control techniques that influence driver performance without substantial infrastructure changes. Some examples of measures that can be taken under this level are as follows:

1. Turn restrictions. These restrictions could be full time or just during peak travel times and require police enforcement to be effective.
2. Pavement markings. Using paint to narrow travel lanes can have a calming effect and provide extra room for bicycles and parked cars. Some communities feel that this type of treatment gives the road a more urban look and is less appealing. This technique is not effective when the travel surface of the road is 11' wide per lane or less.
3. Plantings. Installation of salt tolerant trees near the roadway can narrow the perceived width of the road, creating a "psycho-perceptual impact," where most drivers will slow down. Species selection must take into consideration plant tolerance and preservation of sight distance from adjacent roadways (no low hanging branches) as well as the needs for snow plowing/removal efforts.

## Physical Alteration Control Measures

Physical alterations are design changes in the road infrastructure that create partial barriers or interruptions in the flow of traffic to slow drivers. These measures are not appropriate for arterial, collector and rural connector roads where the primary function is to convey traffic. Some examples of measures that can be taken under this level area as follows:

1. Speed Tables. Speed tables will only be used in a limited fashion. While these devices can be effective in reducing speed at the point of origin and are relatively inexpensive to build, they also cause aggravation to motorists and can cause them to divert onto other local roads to avoid them. A maximum of two speed tables may be approved per road, unless no other traffic control device is installed, in which case the Police Chief may authorize additional speed tables.
2. Chokers/Pedestrian Refuge Islands. Chokers are the narrowing of streets, either at an intersection or mid-block, to reduce the width of the traveled way. Chokers can be designed to widen the sidewalk (bulb design) or an island may be constructed, which would force the traffic toward the curb (island choker). Either way, chokers appear to have the greatest effect in the area of pedestrian safety. By reducing the amount of roadway width, the choker dramatically reduces the exposure time that a pedestrian is in the street. Additionally, both chokers and refuge islands break up the appearance of the roadway and may be landscaped to increase the attractiveness of the area.
3. Traffic Circles. Traffic circles are different from traditional roundabouts in that they are circles placed in an intersection without modifying the outside curbs. As with roundabouts, motorists must yield to traffic in the circle. The primary consideration for installing these types of devices will be the effect on emergency vehicles, school buses and snow plowing/removal. They must be designed in a way that these types of vehicles can either turn left by going around the circle or in some cases turn left in front of the circle by driving over mountable splitter islands.
4. Plantings. Installation of salt tolerant trees near the roadway can narrow the perceived width of the road, creating a "psycho-perceptual impact," where most drivers will slow down. Species selection must take into consideration plant tolerance and preservation of sight distance from adjacent roadways (no low hanging branches) as well as the needs for snow plowing/removal efforts.

### Definitions for Traffic Calming Policy

**SPEED STUDY** – A speed detail conducted by the Police Department consisting of a 5 day period with details conducted twice a day for 20 minute intervals. Time of day for the detail will be determined after consultation with the citizen making the request.

**NEIGHBORHOOD**- The neighborhood consists of the households on the road in question and the households on the side streets that directly come off that road. Should a side street continue onto another main road, the Police Chief or designee, in conjunction with the Public Works Director or designee, shall determine those households on the side road that appear to be affected by any proposed Traffic Control Measures. (This shall be interpreted in favor of inclusion of households)