Appendix C

Calculation of Drainage Channel Rate of Flow

TASK

To estimate the rate of flow for potential spills from bulk storage(petroleum) areas at CWM's Model City Facility.

REFERENCES

1. Water-Resources Engineering, third edition, Linsley and Franzini

ASSUMPTIONS

1. Channel dimensions: Bottom Width = 1.0 feet
   Left Side Slope = 3H:1V
   Right Side Slope = 3H:1V
   Channel Depth = 0.5 feet

GIVEN

1. Channel slopes equal to surface gradients as stated in CWM Model City SPCC Plan (04/95) Section 2.2.3 Surface Water, page 6. The surface gradients range from 0.1 and 0.2 percent.

CALCULATIONS

Mannings Equation for open channel flow is as follows:

$$Q = \frac{1.49\, A^{5/3}\, S^{1/2}}{n * WP^{2/3}}$$

where : A = 2.5 feet * 0.5 feet = 1.25 sq. ft.
S = 0.001 ft/ft to 0.002 ft/ft
n = 0.022 for short grasses
WP = 3.5 feet for full flow

For S = 0.001 ft/ft

$$Q = \frac{1.49\,(1.25)^{5/3}\,(0.001)^{1/2}}{0.022(3.5)^{2/3}} = 1.34 \text{ cfs}$$

V = Q/A = 1.34 cfs/ 1.25 sq. ft. = 1.07 ft/sec

For S = 0.002 ft/ft

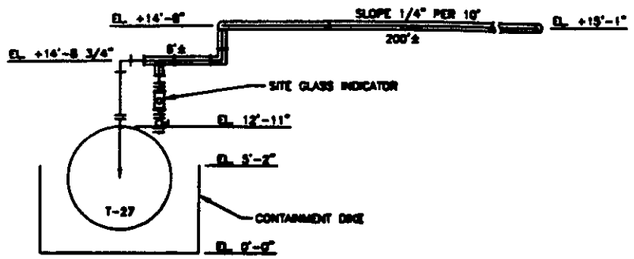
$$Q = \frac{1.49\,(1.25)^{5/3}\,(0.002)^{1/2}}{0.022(3.5)^{2/3}} = 1.90 \text{ cfs}$$

V = Q/A = 1.90 cfs/ 1.25 sq. ft. = 1.52 ft/sec

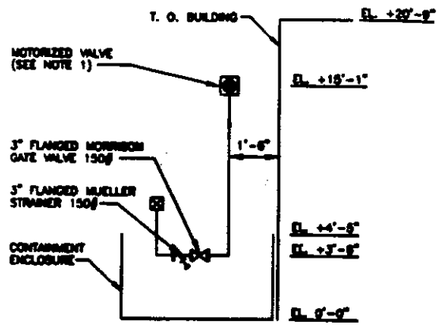
Piping Drawings

Tank No.	Drawing No.
T-105	Figure #12
T-107	Figure #21
T-108	Figure #23
T-109	Figure #22
T-110	Figure #22
T-111	Figure #23
T-130	Figure #12
T-158	Figure #24
T-101	Sheet 3
T-102	Sheet 3
T-103	Sheet 3
T-8008	Drawing 1
DF1	Dwg. No. 18
DF3	NA
E03	NA
E04	NA
E05	NA
GO4	Dwg. No. 18
LG2	Dwg. No. 18
T20	Drawing 1
T27	Dwg. No. 18
UG1	Dwg. No. 18

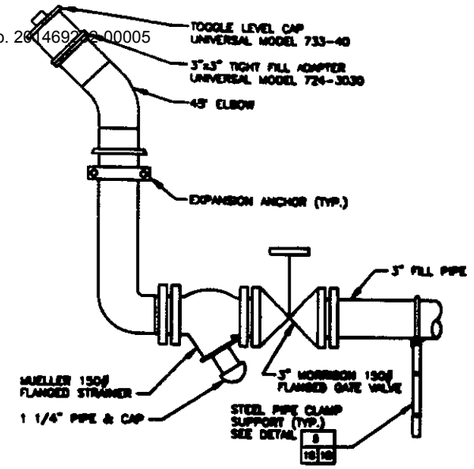
NA = Not Applicable (i.e., tank has no piping)



ELEVATION SECTION (P 10|10)
NOT TO SCALE

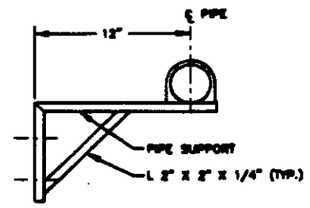


ELEVATION SECTION (Q 10|10)
NOT TO SCALE

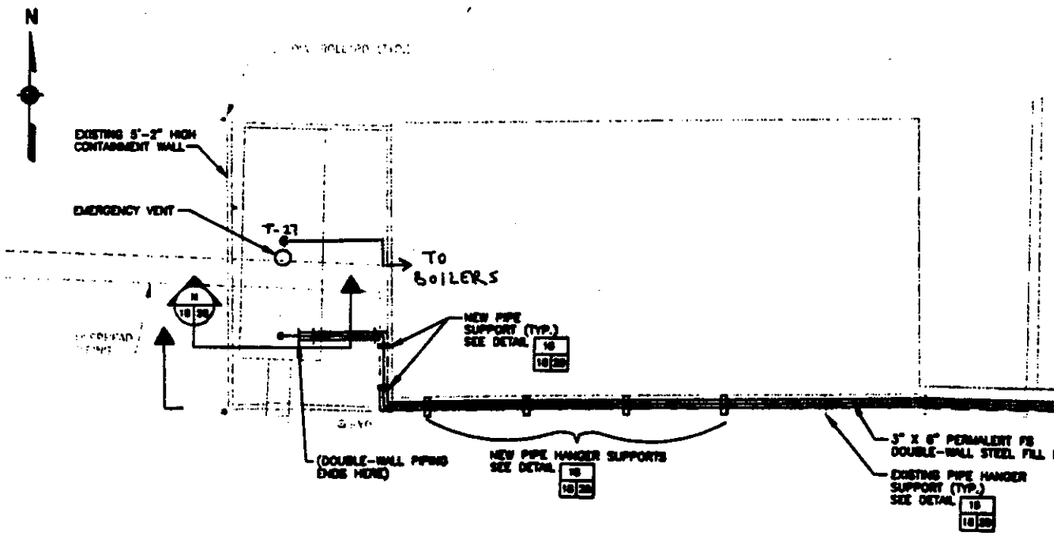


T-27 FILL PORT DETAIL (13 10|10)
NOT TO SCALE

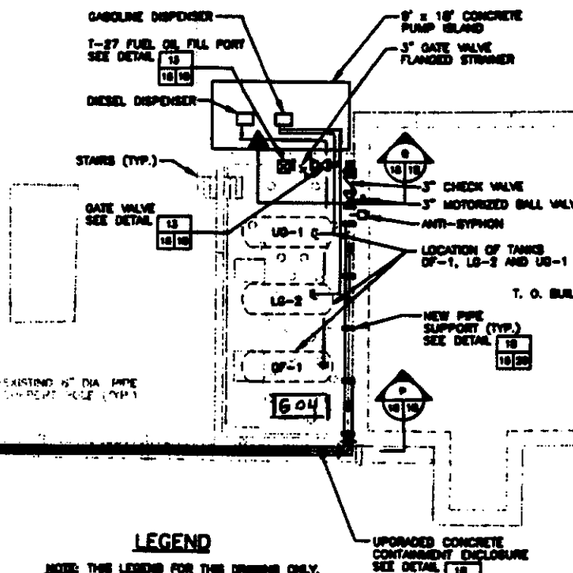
NOTES:
1. ANTISYPHON VALVE INSTALLED AT THE HIGH POINT OF THE FILL PIPING.
2. ELEVATION BASED ON AN ASSUMED DATUM OF 0'-0" AT GRADE.



PIPE SUPPORT DETAIL (8 10|10)
NOT TO SCALE



FUEL TANK SYSTEM FILL PIPING PLAN DETAILS (11 10|10)
SCALE: 1" = 10'-0"



LEGEND

NOTE: THIS LEGEND FOR THIS DRAWING ONLY.

- FILL PORT
- ELBOW
- TEE
- UNION
- FLANGED FITTING
- DUAL CONTAINMENT PIPING
- FLOW DIRECTION
- CHECK VALVE
- MOTORIZED VALVE

RECORD DRAWING

NO	DATE	DESCRIPTION	NO	DATE	DESCRIPTION
1	9, 98	AS BUILT			

REVISIONS

DESIGNED BY: J.M.M.
DRAWN BY: H.B.B.
CHECKED BY: P.C.P.
PROJ. ENGR. R.B.H.

URS Consultants, Inc.
CONSULTING ENGINEERS
BUFFALO NEW YORK

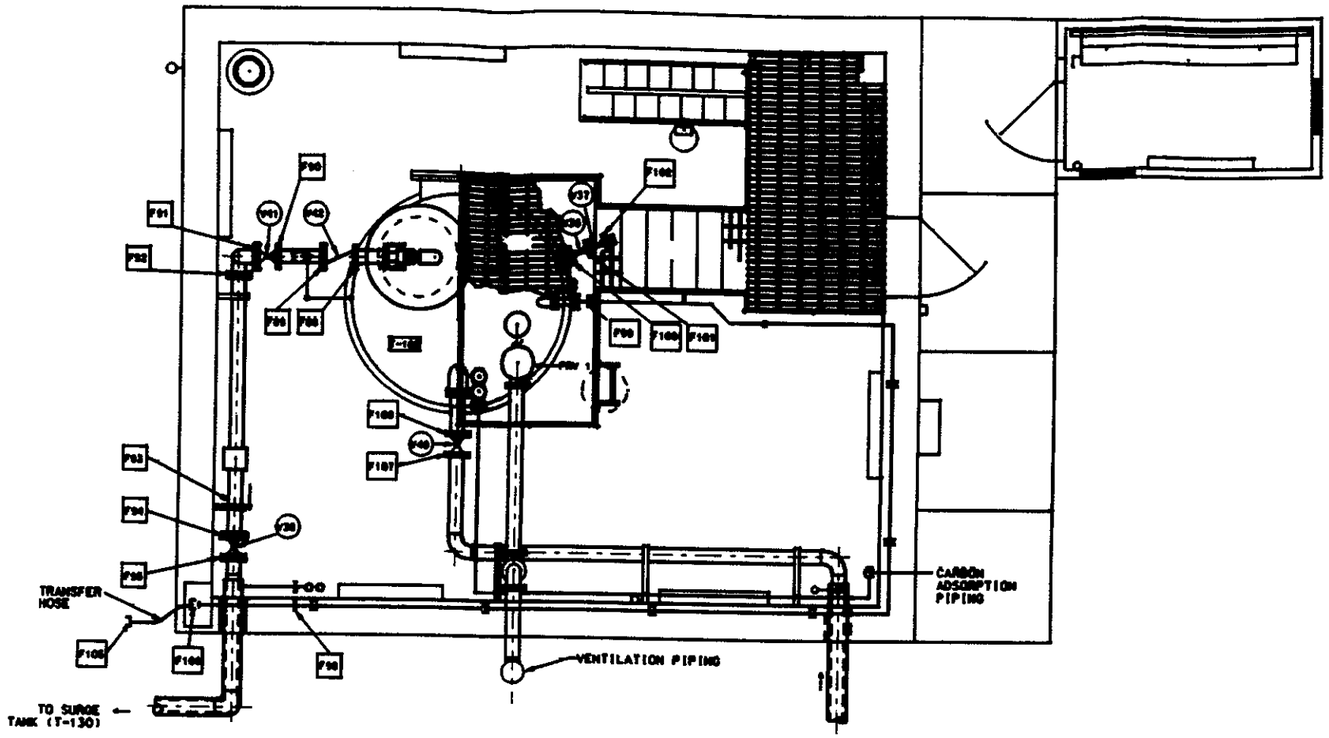
JOB No. 35514.00

CWM CHEMICAL SERVICES, LLC.
MODEL CITY FACILITY
MODEL CITY, NEW YORK

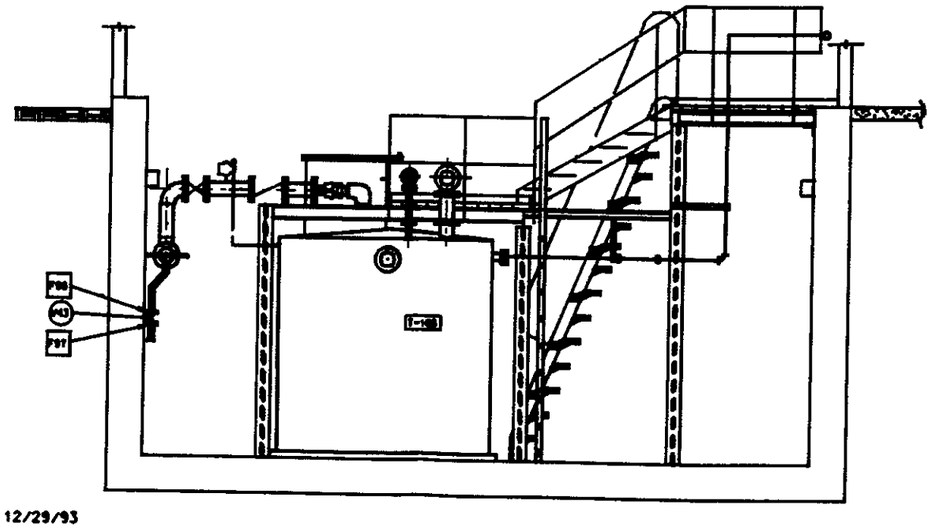
BULK STORAGE OF PETROLEUM PRODUCTS AND PCB WASTE OIL SPILL PREVENTION, CONTROL AND COUNTERMEASURE (SPCC) PLAN RECORD DRAWING OF LOADING STATION SECONDARY CONTAINMENT FACILITIES

T-27 FUEL TANK SYSTEM
FILL PIPING PLAN AND DETAILS

Scale AS SHOWN | Date SEPT. 1998 | DWG. NO. 18



PIPING SCHEMATIC - PLAN VIEW



PIPING SCHEMATIC - LOOKING EAST

LEGEND

- BALL VALVE
- CHECK VALVE
- VALVE ID No.
- FLANGE ID No.
- TANK ID NO.

2 0 2 4 6FT.

NOTE: BASE DRAWING BY SEC DONOHUE. AS - RECORDED. DATED 12/29/93

ENVIRONMENT & INFRASTRUCTURE
3220 Tillman Drive, Suite 300
Bensalem, PA 19020
Tel. (215) 638-4600
FAX (215) 638-4670

Scale	None				
Date	Sept. 1998				
Designer	—				
Drafter	WR				
Checker	FJS				
Approver	CPB				
No.					
Revision					
By					
Date					

SLF 1-6 PREATREATMENT
LIFT STATION
SUBPART BB PROGRAM
CWM CHEMICAL SERVICE, LLC.
MODEL CITY, NY

Figure No. 12
Off. Leg. Sheet No. 1
Project No. 39520
Drawing No. L-10073

27-MAY-1998 10:22
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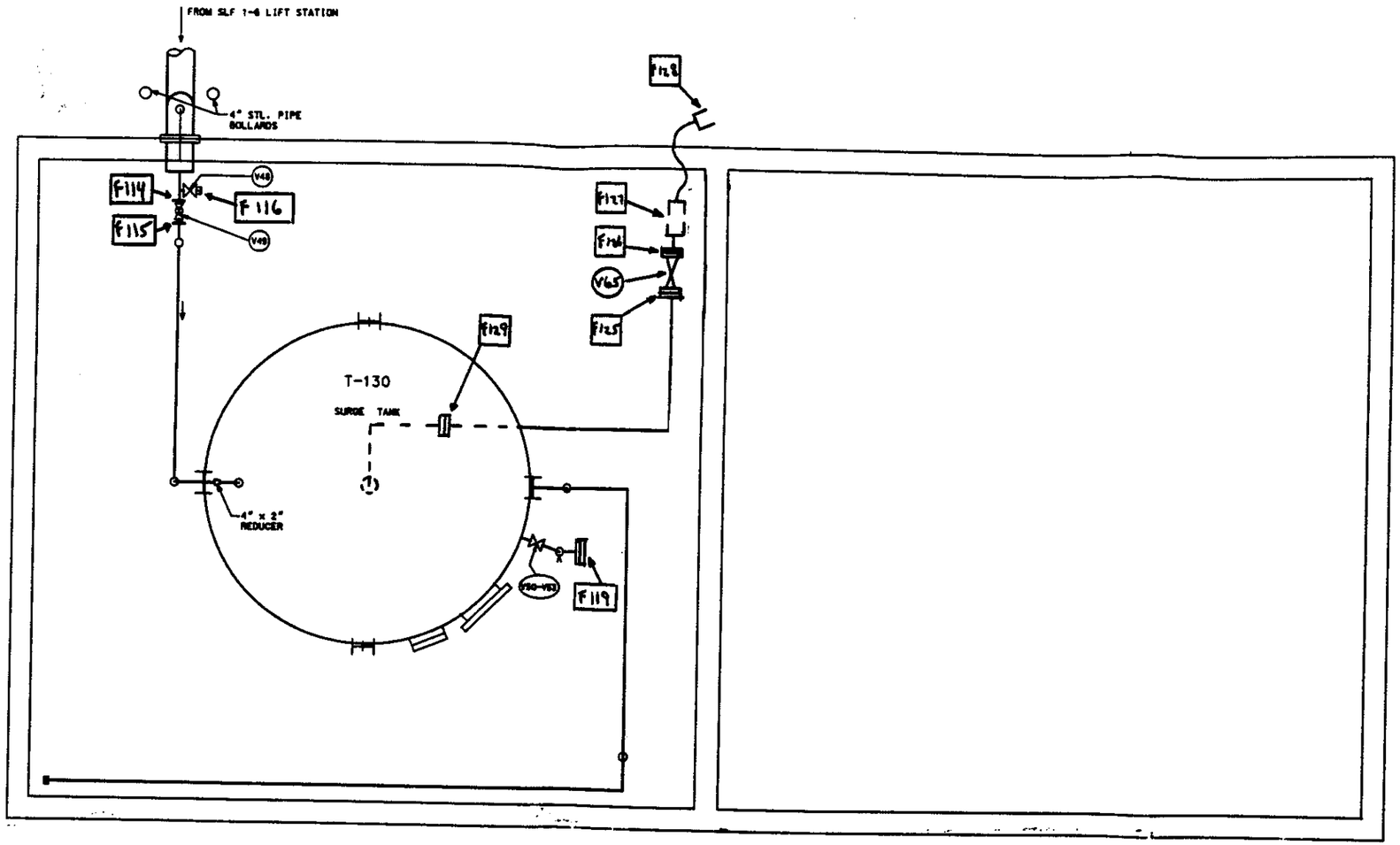

LEGEND

- BALL VALVE
- QUICK DISCONNECT ADAPTER WITH DUST CAP AND CHAIN
- REDUCER
- (V00) VALVE ID No.
- [F00] FLANGE ID No.

2 0 2 4 6FT.

NOTE: HOT WATER TANK IS NOT CONNECTED TO SYSTEM.

NOTE: BASE DRAWING BY SEC DONOHUE, AS - RECORDED, DATED 12/29/93

PIPING SCHEMATIC - PLAN VIEW

No.	Revision	By	Date
5	ADDED F114, F115, F116	SN	6/09
4	ADDED F119, RELOCATED F125, F126, F127, F128	SN	2/08
3	ADDED V45, F125-F129	SN	5/00
2	ADDED F122, V43, F123		9/99
1	DELETED HW TRANSFER POINT		

Scale: None
Date: Sept. 1996
Designer: ——
Drafter: VPR
Checker: FAS
Approver: CPB

EARTH TECH
418 LINCOLN HIGHWAY
FAIRLESS HILLS, PA 19030
Tel. (215) 369-2100
FAX (215) 369-2171

SLF 1-6 PRETREATMENT BUILDING
SUBPART BB PROGRAM
CWM CHEMICAL SERVICE, LLC.
MODEL CITY, NY

Figure No. 12
Off. Log. Sheet No. 3
Project No. 39520
Drawing No. L-72.DGN

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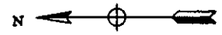
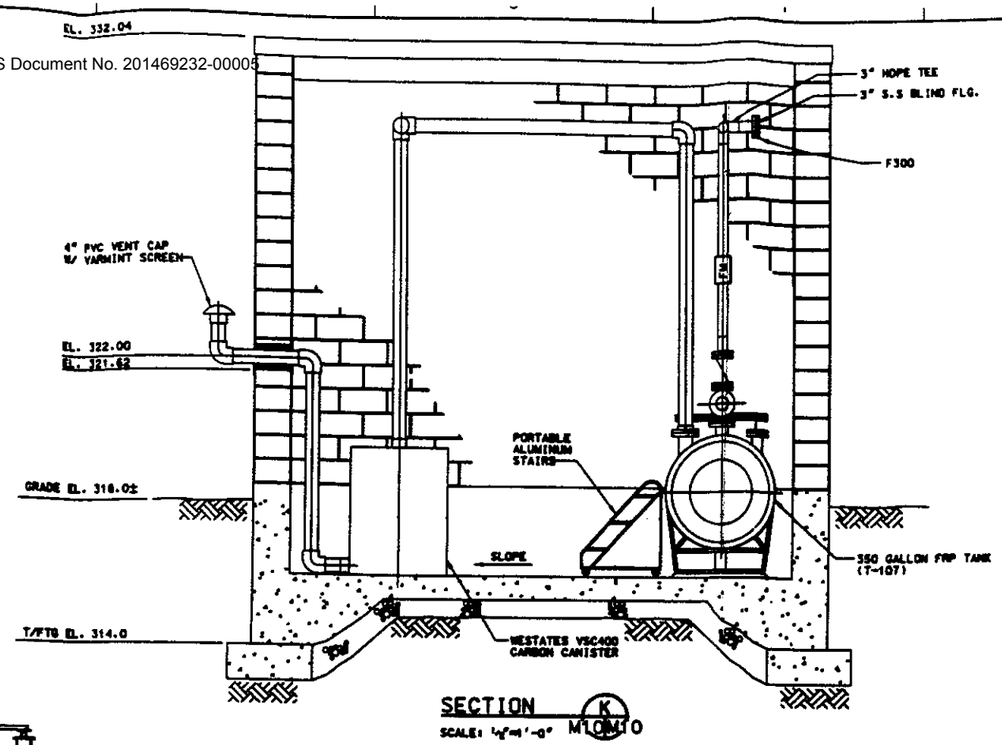
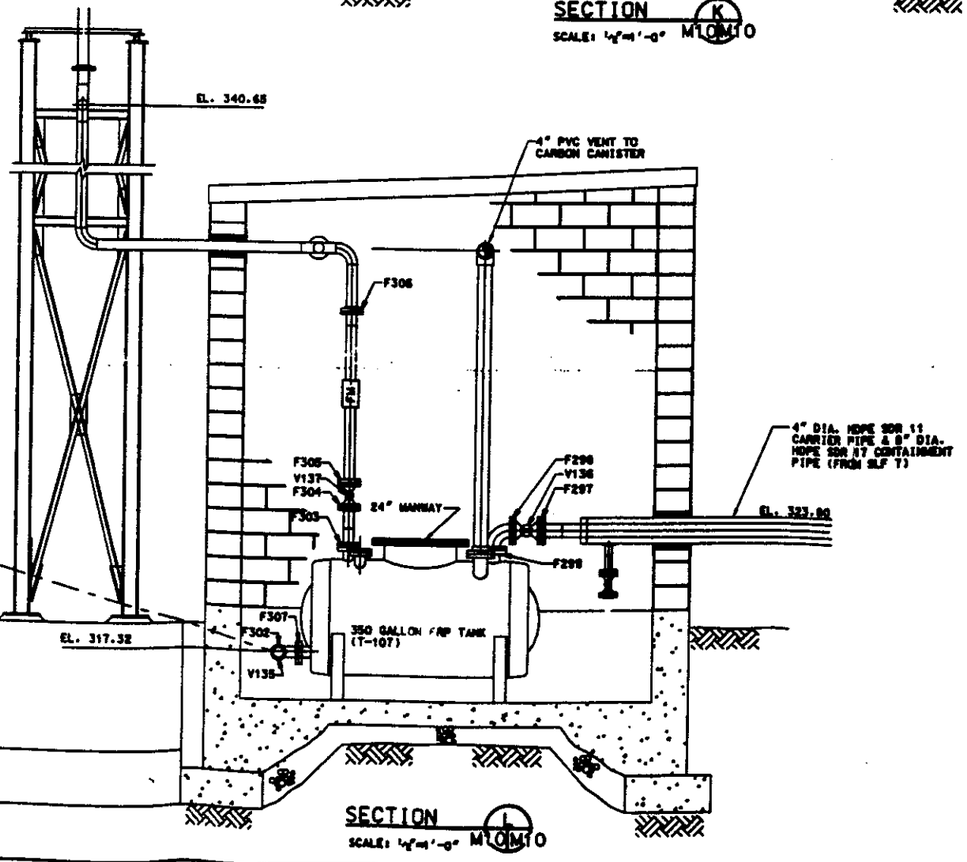
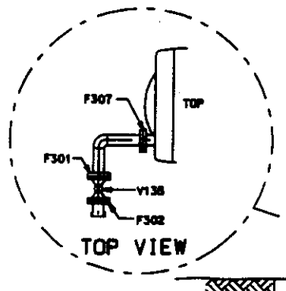




SECTION K
SCALE: 1/4"=1'-0" M10M10



SECTION L
SCALE: 1/4"=1'-0" M10M10



TOP VIEW

NOTES

1. ALL PIPING AND FITTINGS ARE HDPE SDR 11 UNLESS OTHERWISE NOTED.
2. ALL FLANGES ARE 150 lb. W/ STAINLESS STEEL NUTS & BOLTS.
3. ALL OUTSIDE PIPING IS INSULATED W/2" FIBERGLASS AND ALUMINUM JACKETING.
4. PIPE SUPPORTS AND HANGERS NOT SHOWN FOR CLARITY.

NOTE

WARNING: IT IS A VIOLATION OF ARTICLE 145, SEC. 7209(2) OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS THAT PERSON IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER ANY ITEM IN THIS DOCUMENT IN ANY WAY.

REV. NO.	CODE CIRCLES	DATE	DESCRIPTION
1	H	6/21/99	FINAL RECORD REVISION
	CKF		AS PER WEHRAN
			G.A. MARK UPS.
2	VPR	9/99	REVISION T107
			DRAINAGE PIPING

ISSUE CODE			
A	PRELIMINARY	D	MAT'L PURC.
B	DESIGN	E	BIDS
C	MAT'L T.O.	F	CONST'N
G	HYDROG REVIEW	H	RECORD DWG.

SEAL

SIGNATURE

DATE

DR. JWH	DATE MARCH 99
DSGN.	CWM FILE NUMBER
CK.	
DPE	PER NO. 376-378-10A
CAD FILE NO. 8761MB21	SCALE AS NOTED
PROJECT NO. 38761.400	

CWM CHEMICAL SERVICES, LLC
MODEL CITY FACILITY

ENVIRONMENT & INFRASTRUCTURE
Quality through teamwork

PROJECT TITLE
SUBPART BB COMPLIANCE PROGRAM

DRAWING TITLE
SLF 7 PUMP STATION PIPING PLAN AND SECTION (T-107)

CLIENT DRAWING NUMBER	REV NO.
FIGURE #21	1

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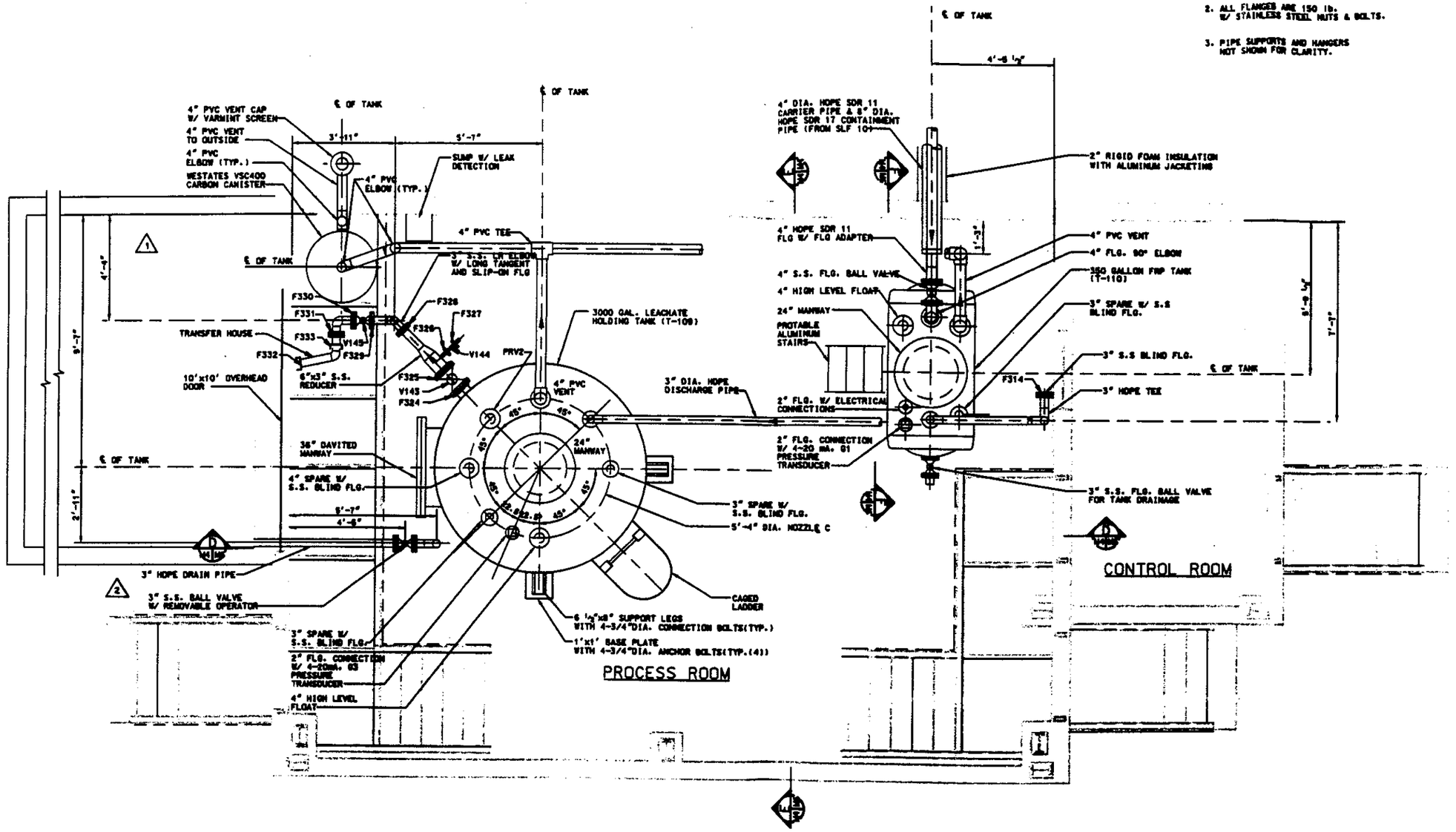
N

NOTES

1. ALL PIPING AND FITTINGS ARE HDPE SDR 11 UNLESS OTHERWISE NOTED.
2. ALL FLANGES ARE 150 lb. W/ STAINLESS STEEL NUTS & BOLTS.
3. PIPE SUPPORTS AND HANGERS NOT SHOWN FOR CLARITY.



LEGEND

— — — HANDRAIL

PIPING PLAN

SCALE: 1/4"=1'-0"

NOTE

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REV. NO.	BY	DATE	DESCRIPTION
1	G	8/21/96	ORIENTATION OF QUICK DISCONNECT MODIFIED
	JWH		
2	G	9/16/96	CONTAINMENT AREA DRAIN ADDED
	JWH		
	H		FINAL RECORD REVISION
	CKF		AS PER WEHRAN
			G.A. MARK UPS.
3	VPR		REVISED T-109
			DISCHARGE PIPING

CODE CIRCLES

ISSUE CODE: A PRELIMINARY; B DESIGN; C MAT'L T.O.; D MAT'L PURC.; E BIDS; F CONST'N; G NYSDEC REVIEW; H RECORD DWG.

SEAL

SIGNATURE

DATE

DR. JWH	DATE MARCH 96
DSGN.	CHM FILE NUMBER
CK.	
DPE	PER NO. 376-376-10A
CAD FILE NO. B761MB41	SCALE AS NOTED
PROJECT NO. 36761.400	

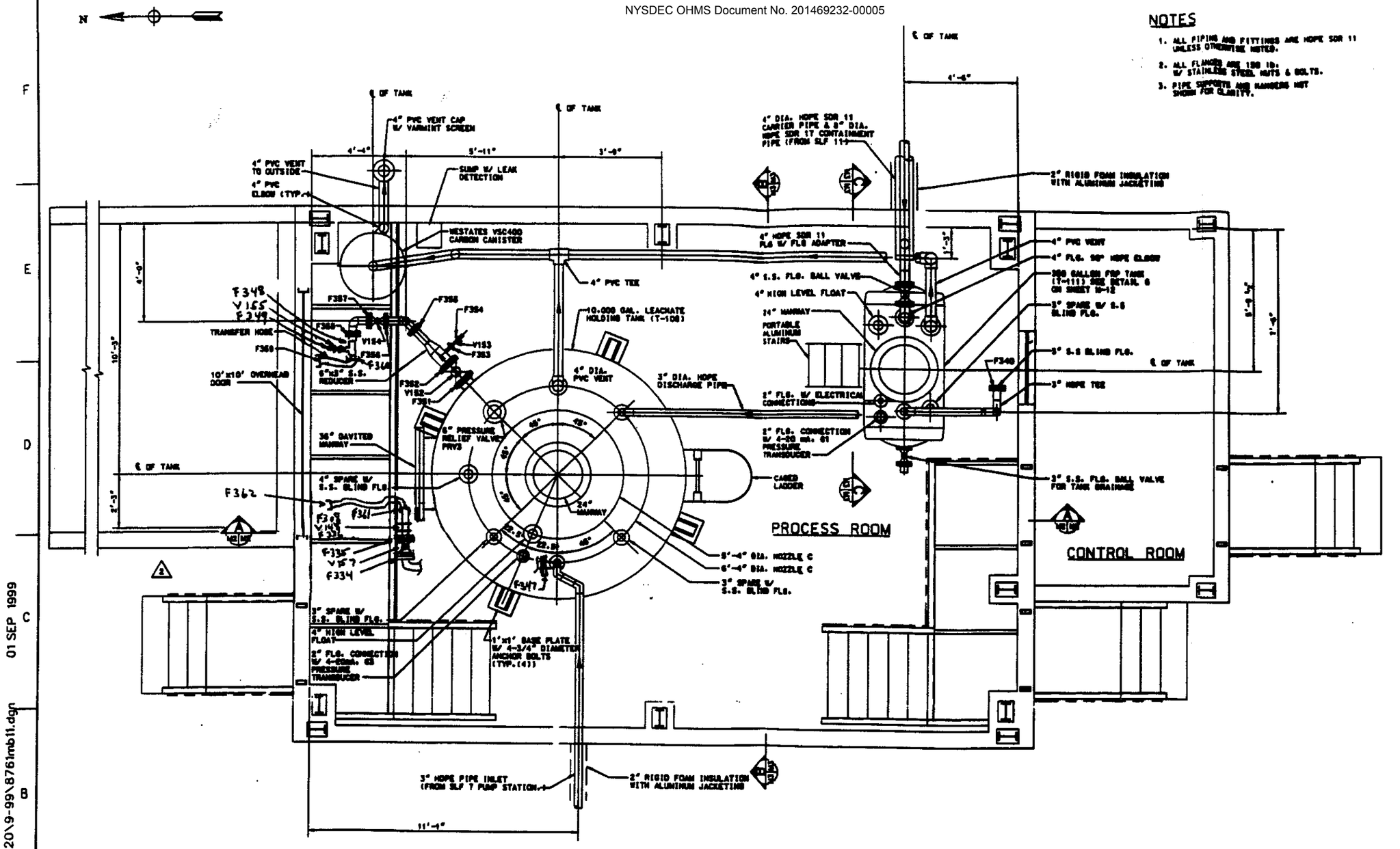
CHM CHEMICAL SERVICES, LLC
MODEL CITY FACILITY

RUST ENVIRONMENT & INFRASTRUCTURE
Quality through teamwork

PROJECT TITLE
SUBPART BB COMPLIANCE PROGRAM

DRAWING TITLE
SLF 10 HOLDING TANK BUILDING PIPING PLAN (T-109 AND T-110)

CLIENT DRAWING NUMBER	REV NO.
FIGURE #22 SHEET 1 OF 2	3



PIPING PLAN
SCALE: 1/4"=1'-0"

LEGEND
- - - - - HANDRAIL

NOTE
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REV. NO.	CODE	CHECKED	DATE	REV. BY	DESCRIPTION
1	0		8/17/99	JMH	ORIENTATION OF QUICK DISCONNECT MODIFIED
2	0		9/8/99	JMH	CONTAINMENT AREA DRAIN ADDED
3	N1		10/4/99	CMF	FINAL RECORD REVISION AS PER VENRAR G.A. MARK UP'S.
4			10/12/99	VPR	REVISED T108 DRAINAGE PIPING
5			10/27/99	JMH	Added F348, V165 and F349
6			3/24/00	JMH	Added F347, F334 F335, F336, F338, F341, F342, V148, V157

ISSUE CODE: A PRELIMINARY; B DESIGN; C MAT'L T.O.; D MAT'L PURC.; E BIDS; F CONST'N; G HYDRAULIC REVIEW; H RECORD DWG.

SEAL
SIGNATURE
DATE

DR. JMH	DATE MARCH 00
DESN.	CMH FILE NUMBER
CK.	
APP.	PER NO. 378-378-19A
CAD FILE NO. 8761MB11	SCALE AS NOTED
PROJECT NO. 39761.499	

CMH CHEMICAL SERVICES, LLC
MODEL CITY FACILITY

RUST ENVIRONMENT & INFRASTRUCTURE
Quality through teamwork

PROJECT TITLE
SUBPART BB COMPLIANCE PROGRAM

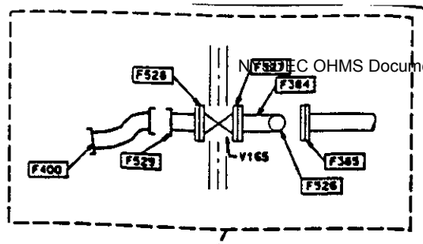
DRAWING TITLE
SLF 7 AND SLF 11 HOLDING TANK BUILDING PIPING PLAN (T-108 AND T-111)

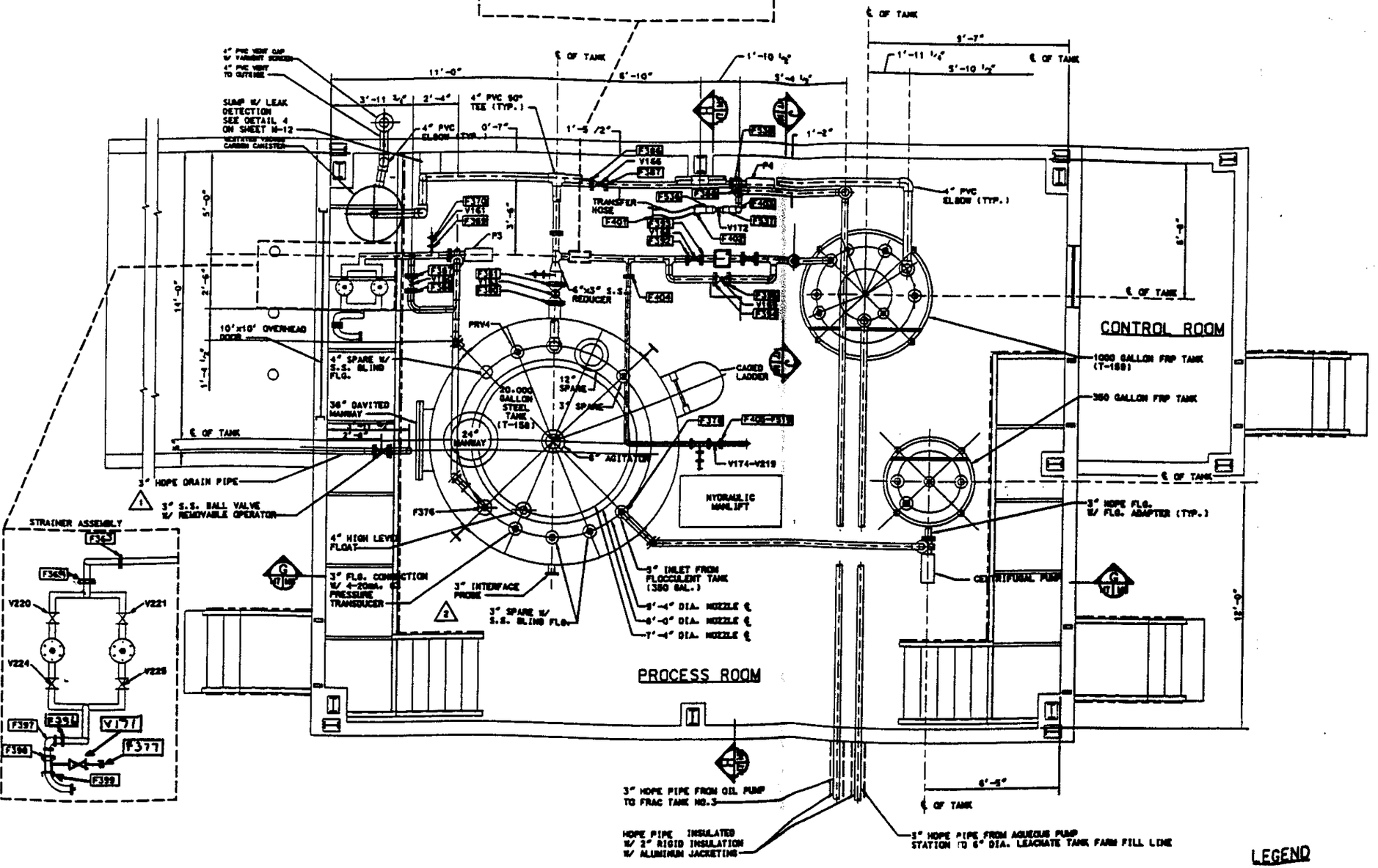
CLIENT DRAWING NUMBER	REV NO.
FIGURE #23 SHEET 1 OF 2	6

N

NOTES

1. ALL PIPING AND FITTINGS ARE HDPE UNLESS OTHERWISE NOTED.
2. ALL FLANGES ARE 150 lb. W/ STAINLESS STEEL NUTS & BOLTS
3. PIPE SUPPORTS AND HANGERS NOT SHOWN FOR CLARITY





PIPING PLAN

SCALE: 3/8"=1'-0"

LEGEND

---- HANDRAIL

NOTE

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REV. NO.	CODE	CIRCLES	DATE	DESCRIPTION
1	G JWH		8/21/98	CONTAINMENT AREA DRAIN ADDED
2	G JWH		11/18/98	INTERFACE PROBE ADDED
3	H CKF		1/99	FINAL RECORD REVISION AS PER NEHRAM G.A. MARK UPS.
4	H VPR			ADDED STRAINER ASSEMBLY
4	VPR			ADDED F536-F537-F538
5	JWH		5/04	DELETED V226 V227 F524 F525 SWITCHED F363/F364 ADDED F377 + V171
6	JWH			

ISSUE CODE			
A	PRELIMINARY	D	MAT'L T.O.
B	DESIGN	E	MAT'L PURC.
C	BIDS	F	CONST'N
G	HYSORC REVI.	H	RECORD DWG.

SEAL

SIGNATURE

DATE

DR. JBH	DATE MARCH 98
DSGN.	CHK FILE NUMBER
CK.	
SPE	PER NO. 378-378-506
CAD FILE NO. ST61M881	SCALE
PROJECT NO. 38761.488	AS NOTED

CMM CHEMICAL SERVICES, LLC
MODEL CITY FACILITY

EARTH TECH

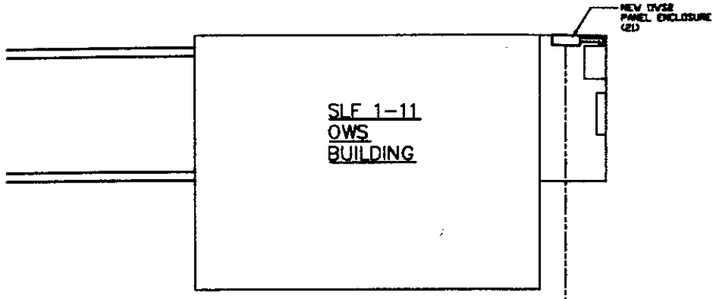
PROJECT TITLE

SUBPART BB COMPLIANCE PROGRAM

DRAWING TITLE

OIL/WATER SEPARATOR BUILDING PIPING PLAN (T-158 AND T-159)

CLIENT DRAWING NUMBER	REV NO.
FIGURE #24 SHEET 1 OF 2	6



NOTES

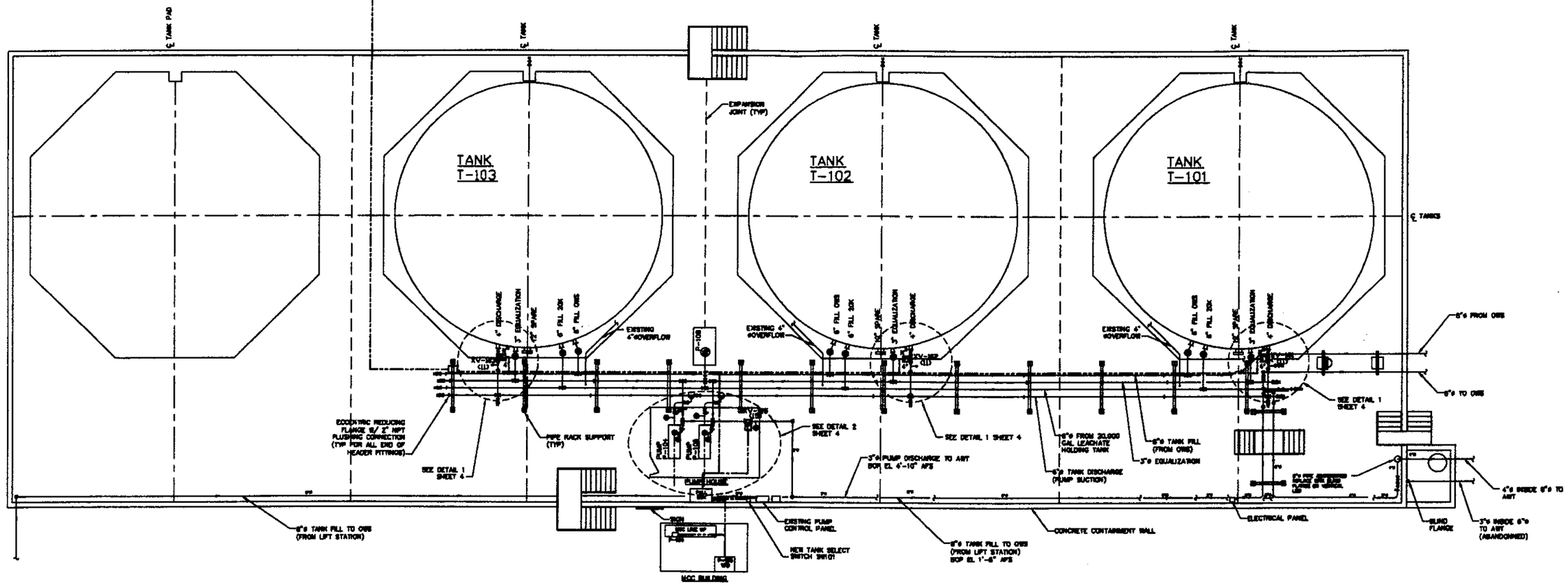
1. INSTALL NEW ACTUATORS FOR EXISITNG 4" ø SS BALL VALVES AT TANK OUTLETS FOR T-101, T-102, & T-103 (XV-101, XV-102, & XV-103).
2. SEE WIRING PLAN ON SHEET 4 FOR ADDITIONAL ELECTRICAL CONTROL INFORMATION.
3. SEE BILL OF MATERIALS FOR FURTHER INFORMATION.

LEGEND

- FLOW DIRECTION
- FLANGE CONNECTION
- PLUG VALVE
- BALL VALVE
- TEE CONNECTION DOWN
- TEE CONNECTION UP
- FLUSHING CONNECTION
- REDUCER
- ELECTRICAL CONDUIT

TAG ID # XV-01 (16) — 6" — E
- VALVE SIZE
- BILL OF MATERIALS ITEM NO.

NEW ELECTRICALLY ACTUATED BALL VALVE WITH POSITION SWITCHES



LEACHATE TANK FARM SITE PLAN

	REVISION	BY	DATE
1	"AS BUILT" RECORD DRAWING	MJM	4-16-08

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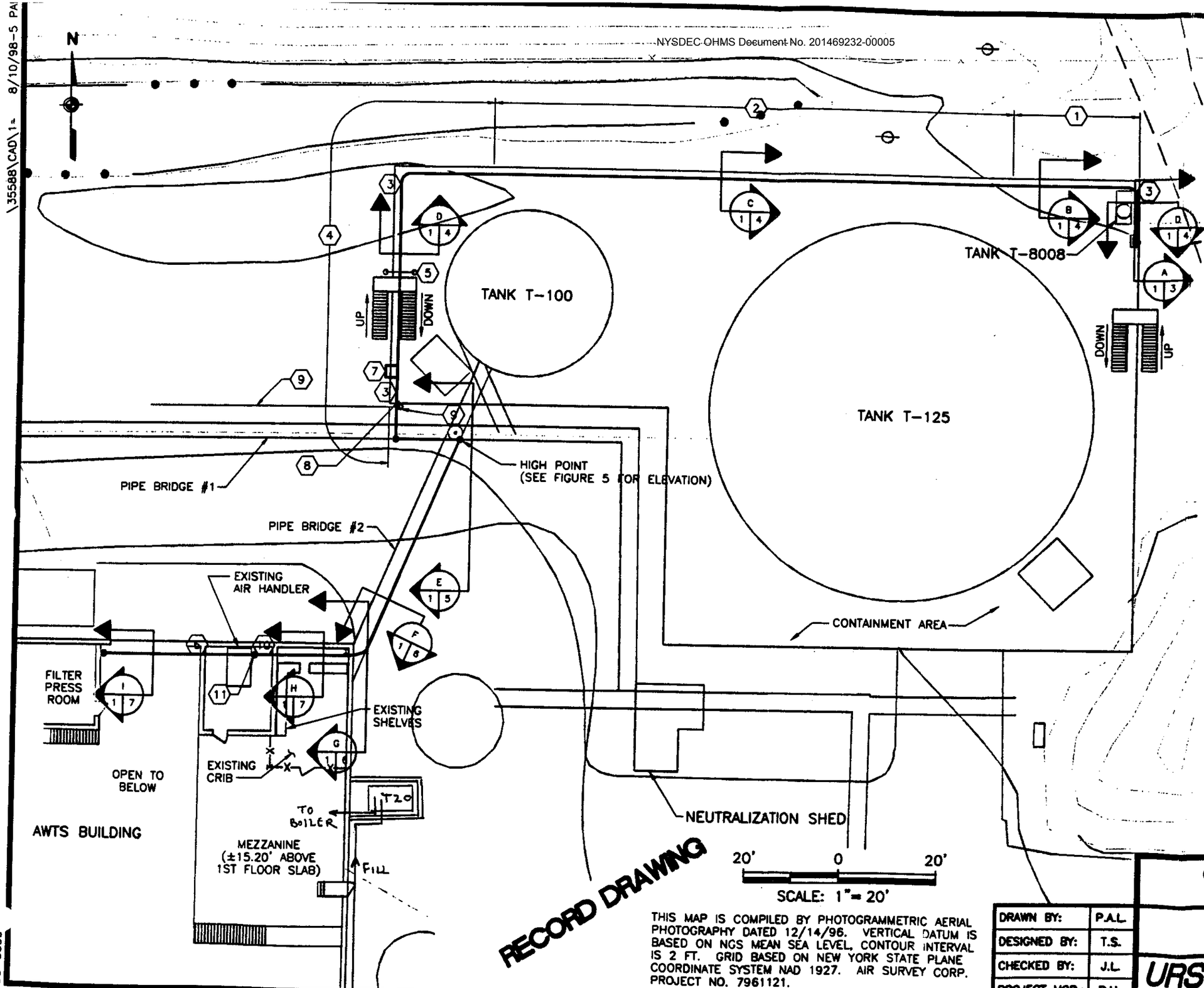
EnSol, Inc.
Environmental Solutions
452 THIRD STREET
NIAGARA FALLS, NY 14301
PHONE (716) 285-3920 FAX (716) 285-3928

PROJECT NO:	03-7014		
SCALE:	7.5' 0 7.5' 15'		
DWG:	03-7014-D03_04.DWG		
DRAWN BY:	KFP	CHECKED BY:	BDS
DATE:	APRIL 2004		

TITLE:	LEACHATE TANK FARM PROCESS UPGRADES PLAN	
PROJECT:	INTERCONNECTED TANKS UPGRADE PROJECT	SHEET 3
PREPARED FOR:	CWM CHEMICAL SERVICES, LLC.	
TOWN OF PORTER	COUNTY OF NIAGARA	STATE OF NEW YORK



RECORD DRAWING

THIS MAP IS COMPILED BY PHOTOGRAMMETRIC AERIAL PHOTOGRAPHY DATED 12/14/96. VERTICAL DATUM IS BASED ON NGS MEAN SEA LEVEL, CONTOUR INTERVAL IS 2 FT. GRID BASED ON NEW YORK STATE PLANE COORDINATE SYSTEM NAD 1927. AIR SURVEY CORP. PROJECT NO. 7961121.

GENERAL NOTES:

1. INSTALL NEW DNAPL LINE FROM EXISTING TANK T-8008 TO AWTS BUILDING. LINE SHALL BE 1" SDR 11 HDPE PLEXCO. AVOID JOINTS WHEREVER POSSIBLE. JOINTS INDICATED SHALL BE BUTT FUSION WELDED BY A CERTIFIED HDPE FUSION WELDER. INSTALL LINE AT 0.5% PITCH FROM HIGH POINT.

2. INSTALL NEW DNAPL PUMP P-1 SOUTH OF TANK T-8008.

3. 2' BEND RADIUS MINIMUM IN DNAPL LINE TYPICAL (SMALLEST PER MFG'S RECOMMENDTAIONS).

NUMBERED NOTES: ⬡

1. EXISTING DOUBLE CHANNEL UNISTRUT IN THIS AREA. LOOSEN SCREWS AND RAISE AS REQUIRED. INSTALL NEW CONTINUOUS UNISTRUT ANGLE BELOW ON EXISTING VERTICAL CHANNELS. EXISTING VERTICAL CHANNELS ARE SPACED APPROXIMATELY EVERY 10'.

2. EXISTING SINGLE CHANNEL UNISTRUT IN THIS AREA. LOOSEN SCREWS AND RAISE AS REQUIRED. INSTALL NEW CONTINUOUS UNISTRUT ANGLE BELOW ON EXISTING VERTICAL CHANNELS. EXISTING VERTICAL CHANNELS ARE SPACED APPROXIMATELY EVERY 10'.

3. EXPANSION RADIUS MINIMUM IN DNAPL LINE TYPICAL (SMALLEST PER MFG'S RECOMMENDATIONS).

4. INSTALL NEW CONTINUOUS UNISTRUT ANGLE AND VERTICAL CHANNELS. INSTALL VERTICAL CHANNELS ON 10' CENTERS. POSITION NEW CHANNEL AND LINE ABOVE EXISTING 3" HORIZONTAL HDPE LINE.

5. INSTALL NEW DNAPL LINE BEHIND EXISTING 3" HDPE RISER.

6. AT THIS POINT EXISTING 3" PIPELINES AND HANGERS ARE OFFSET SOUTH APPROXIMATELY 16".

7. REMOVE EXISTING SENSOR, PROBE AND ELECTRICAL BOX. REMOVE CONDUCTORS AND CONDUIT BACK TO POWER SOURCE. TURN SENSOR OVER TO OWNER.

8. VERTICAL 1" DNAPL PIPE ATTACH TO EXISTING 3" MAST/STEEL COLUMN.

9. REMOVE ABANDONED PIPE (APPROXIMATELY 50' LONG) AND FITTINGS. TURN OVER TO OWNER.

10. STRAP NEW DNAPL LINE TO SOUTHMOST EXISTING 3" LEACHATE TRANSFER LINES IN AWTS BUILDING.

11. DROP DNAPL LINE TO BELOW EXISTING AIR HANDLER.

DRAWN BY:	P.A.L.
DESIGNED BY:	T.S.
CHECKED BY:	J.L.
PROJECT MGR.:	B.H.

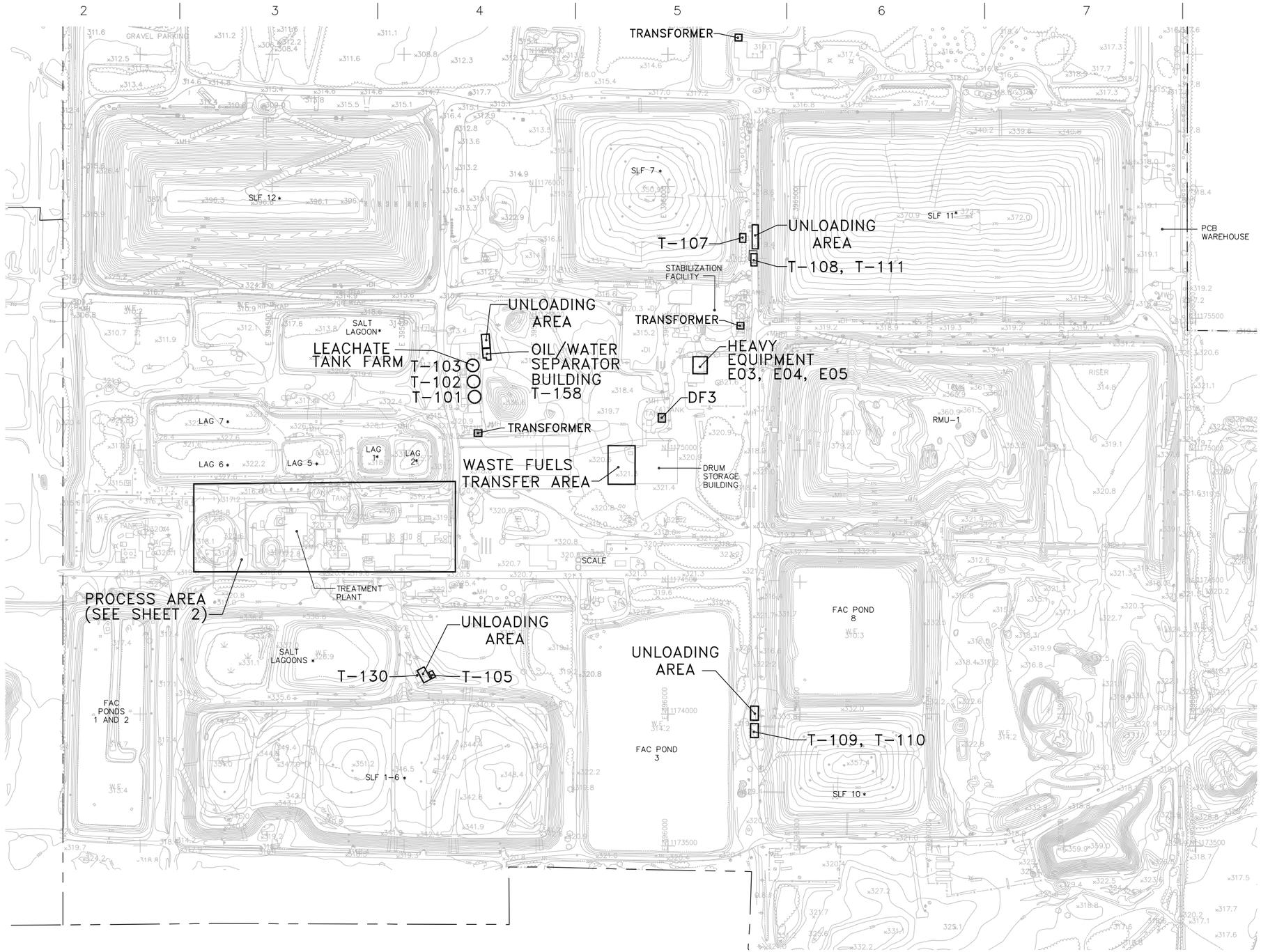
CWM CHEMICAL SERVICES, LLC.
TANK T-8008 TRANSFER LINE

SITE PLAN

URS Greiner Consultants, Inc.

DRAWING 1

CC-5599



LEGEND:

SLF	SECURE LANDFILL
FAC	FACULTATIVE
LAG	LAGOON
*	INACTIVE
—— – – ——	APPROXIMATE PROPERTY LINE

NOTES:

1. BASE MAP INFORMATION COMPILED BY PHOTOGRAMETRIC METHODS FROM AERIAL PHOTOGRAPHY DATED 11/29/97 AND FROM SCANNED IMAGES.
2. PCB WAREHOUSE DRAWING DETAILS ARE IN FIGURE 4-1 OF THE SPCC PLAN.
3. PCB AND BULK PETROLEUM STORAGE TANKS WITHIN THE PROCESS AREA CAN BE FOUND ON SHEET 2.
4. THE FOLLOWING TANKS ARE SPCC REGULATED (ALL TANKS ARE ABOVE GROUND):

TANK NUMBER	GRID LOCATION	CONTENTS
E03	E5	ENGINE OIL
E04	E5	ENGINE OIL
E05	E5	USED OIL
DF3	D5	DIESEL
T-105 SLF 1-6 LIFT STATION	C4	PCB LIQUIDS/LEACHATE
T-130 SLF 1-6 SURGE TANK	C4	PCB LIQUIDS/LEACHATE
T-107, SLF 7 WET WELL	E5	PCB LIQUIDS/LEACHATE
T-108, SLF 7/11 HOLDING TANK	E5	PCB LIQUIDS/LEACHATE
T-109, SLF 10 HOLDING TANK	C5	PCB LIQUIDS/LEACHATE
T-110, SLF 10 WET WELL	C5	PCB LIQUIDS/LEACHATE
T-111, SLF 11 WET WELL	E5	PCB LIQUIDS/LEACHATE
T-158, SLF OIL/WATER SEPARATOR	E4	PCB LIQUIDS/LEACHATE
T-101, LEACHATE TANK FARM	E4	PCB LIQUIDS/LEACHATE
T-102, LEACHATE TANK FARM	E4	PCB LIQUIDS/LEACHATE
T-103, LEACHATE TANK FARM	E4	PCB LIQUIDS/LEACHATE

0 200' 400'
GRAPHIC SCALE

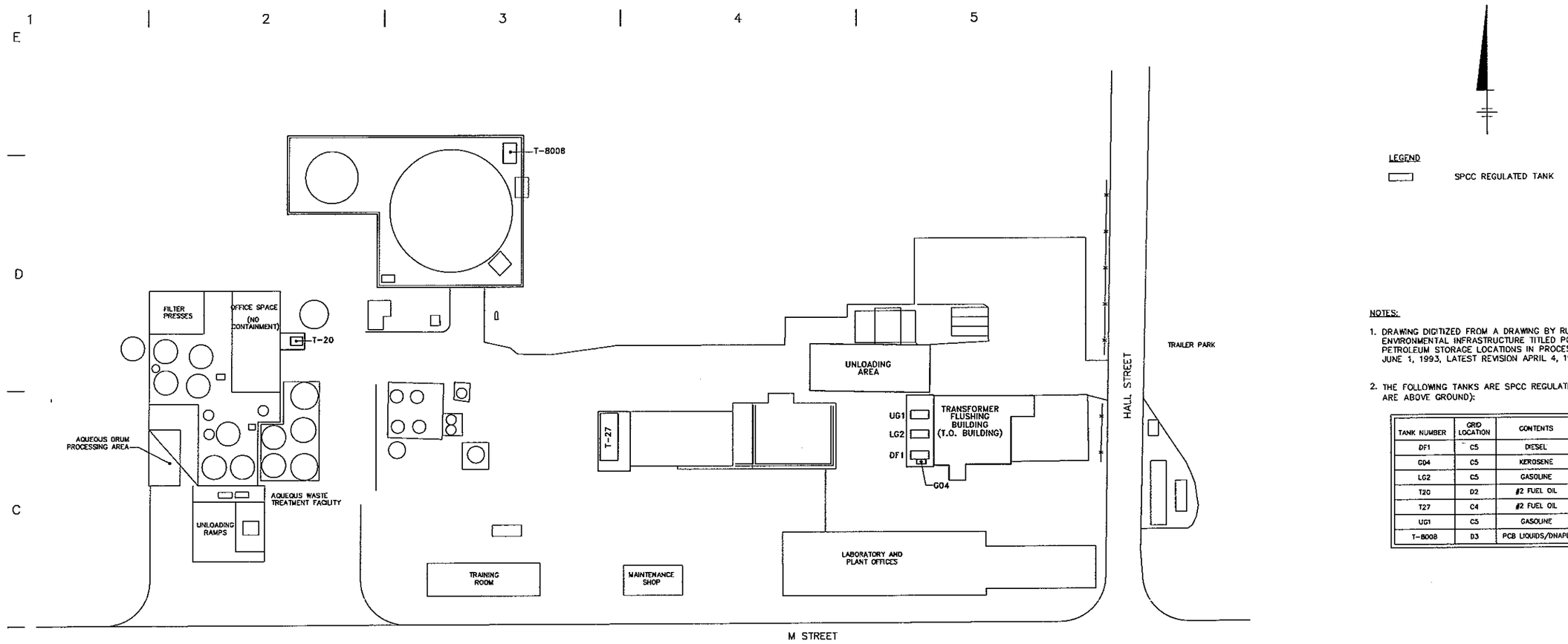
REV 1	4/25/00	ADDED TANKS T-101, T-102, T-103
REV 2	7/15/03	REMOVED FRAC TANK #3, ADDED TRANSFORMERS
REV 3	10/16/09	REVISED NOTE 4 AND TABLE

CWM CHEMICAL SERVICES, LLC.
MODEL CITY, NEW YORK
SPCC PLAN UPDATE

SITE PLAN, PCB AND BULK PETROLEUM STORAGE LOCATIONS

ARCADIS

SHEET 1



NOTES:

1. DRAWING DIGITIZED FROM A DRAWING BY RUST ENVIRONMENTAL INFRASTRUCTURE TITLED PCB AND BULK PETROLEUM STORAGE LOCATIONS IN PROCESS AREA DATED JUNE 1, 1993, LATEST REVISION APRIL 4, 1995.

2. THE FOLLOWING TANKS ARE SPCC REGULATED (ALL TANKS ARE ABOVE GROUND):

TANK NUMBER	GRID LOCATION	CONTENTS
DF1	C5	DIESEL
G04	C5	KEROSENE
LG2	C5	GASOLINE
T20	D2	#2 FUEL OIL
T27	C4	#2 FUEL OIL
UG1	C5	GASOLINE
T-8008	D3	PCB LIQUIDS/DNAPL

REV 1	8/10/98	ADDED TANK T-8008
REV 2	2/9/99	RELOCATED TANK G04
REV 3	10/16/09	REVISED NOTE 2 AND TABLE

CWM CHEMICAL SERVICES, LLC.
MODEL CITY, NEW YORK

SPCC PLAN UPDATE

PCB AND BULK PETROLEUM STORAGE LOCATIONS IN PROCESS AREA

ARCADIS

SHEET 2

CITY: SYRACUSE DIVGROUP: ENV CAD DB: B.DECLERCQ LD: PIC: PM: TM: LYR:ON=*OFF=*REF*
G:\ENVCAD\SYRACUSE\ACTIB0023729\000000010\DWG\SPCC\023729G02.dwg LAYOUT: 2 SAVED: 11/12/2009 5:05 PM ACADVER: 17.0S (LMS TECH) PAGESETUP: — PLOTSTYLETABLE: PLTHALF.CTB PLOTTED: 11/12/2009 5:05 PM BY: SMITHGALL, NANCY
XREFS: IMAGES: PROJECTNAME: —

ARCADIS

Appendix E

Traffic Analysis Study

TRAFFIC ANALYSIS STUDY

FOR PROPOSED LANDFILL SITE

PREPARED FOR
CWM CHEMICAL SERVICES, INC.
MODEL CITY, NEW YORK

PREPARED BY
BETTIGOLE ANDREWS & CLARK, INC.
237 MAIN STREET
BUFFALO, NEW YORK 14203

Lane K. Hardin

LANE K. HARDIN P.E.
VICE PRESIDENT

MARCH 10, 1993

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INTRODUCTION

CWM Chemical Services, Inc. (CWM) is currently in the process of developing a design and permit application package for a proposed hazardous waste landfill, referred to as Residuals Management Unit-1 (RMU-1), on property they own which is currently being utilized for a landfill operation. The site is located in the Town of Porter, New York adjacent to Balmer Road in the northwestern part of Niagara County and is shown in Figure 1. The site is intended to have access through existing roadways that serve the current activities of CWM on their facility.

The specific site for the proposedhazardous waste landfill is located within the confines of the existing CWM permitted treatment, storage and disposal facility (TSDF). The facility location is bounded by Balmer Road to the north and Porter Center Road to the east. Other privately owned properties bound the CWM Model City facility on the south and west sides.

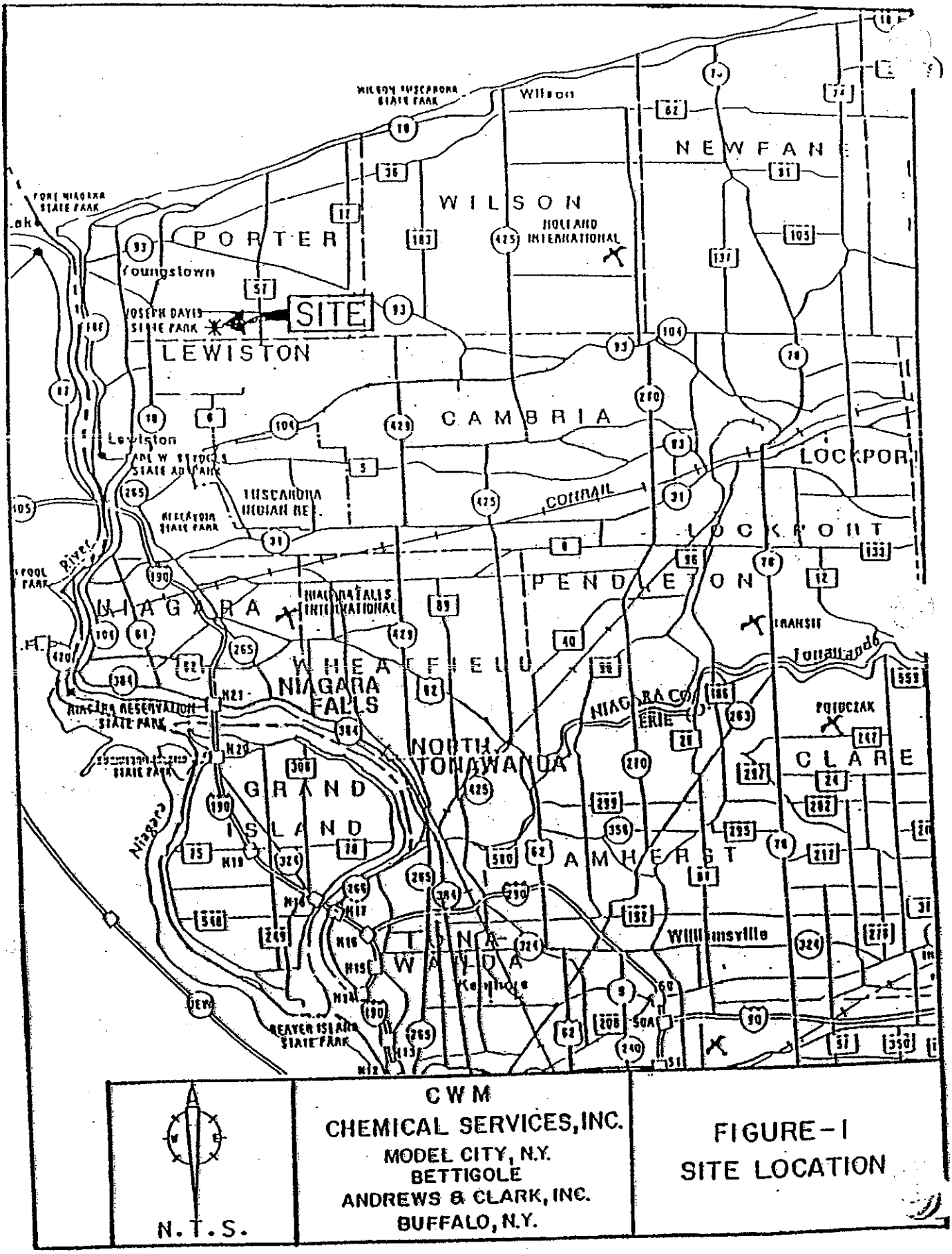
A Draft Environmental Impact Study (DEIS) is part of the RMU-1 permit application process and traffic is one component of the DEIS. Bettigole Andrews & Clark, Inc. was contracted by RUST Environment & Infrastructure to determine:

* The existing traffic operations on the current designated waste transportation route, and

* The traffic operations on the current designated transportation route for the target year (1993) without and with the influence of soil hauling trucks anticipated for construction of the proposed landfill.

* Determine the amount of additional truck traffic that would cause a change of one level of traffic operations on the transportation route.

Thus, the purpose of this study is to identify existing traffic operations along the currently designated transportation route (New York Routes 104, 18 and Balmer Road), target year (1993) traffic operations, and the magnitude of additional truck traffic to change traffic level of service operations. This report includes Findings from the analysis and Recommendations, as warranted, to accommodate travel demands anticipated by traffic.


SITE
PORTER
WILSON
NEWFANE
LEWISTON
CAMBRIA
LOCKPORT
PENDLETON
NIAGARA
WHEATFIELD
NIAGARA FALLS
NORTH TONAWANDA
GRAND ISLAND
AMHERST
CLARE
TONAWANDA
Youngstown
Lewiston
Niagara
Williamsville
N.T.S.
CWM
CHEMICAL SERVICES, INC.
MODEL CITY, N.Y.
BETTIGOLE
ANDREWS & CLARK, INC.
BUFFALO, N.Y.
FIGURE-1
SITE LOCATION

SCOPE

This traffic impact study addresses the issue of:

* Traffic

The traffic analysis contained herein was conducted for two (2) basic conditions:

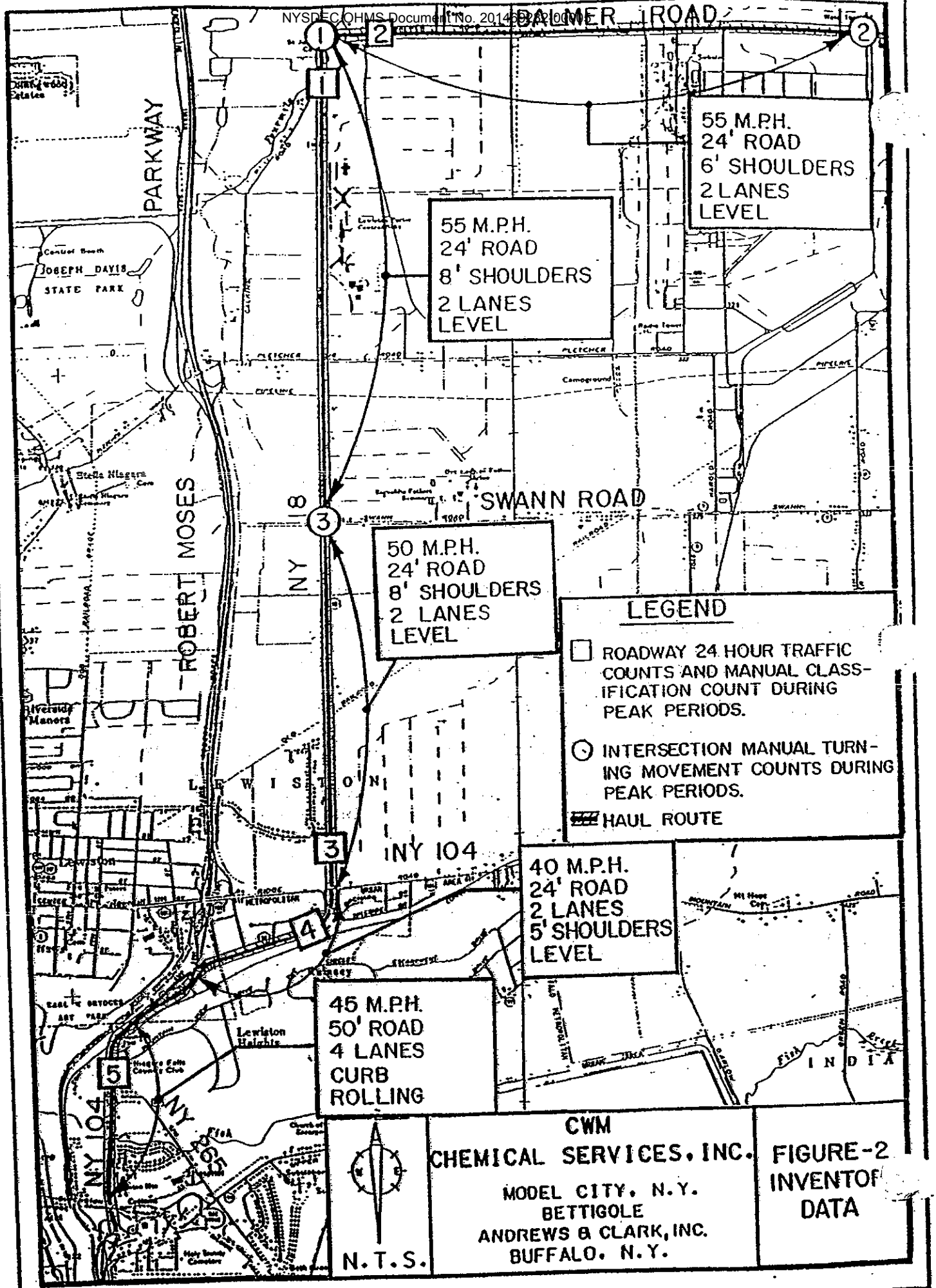
* Existing traffic conditions.

* Target year (1993) traffic conditions.

Traffic operations were analyzed at three (3) intersections - Balmer Road and NY 18, NY 18 and Swann Road and Balmer Road and CWM Driveway - and for five (5) highway segments located on NY 18, NY 104 and Balmer Road. These locations are shown in Figure 2. They have been analyzed because all waste hauling vehicles that access the site utilize NY 104, NY 18 and Balmer Road. Site related truck traffic is expected to use these highways in the foreseeable future.

Concern by residents and CWM about the impact of site related traffic on these roadways is the issue of the traffic analysis study. There is considerable concern because all site related truck traffic as well as a major portion of the current employment staff utilizes Routes 104, 18 and Balmer Road from the south to access the site. In addition, for purposes of a worst-case analysis in the DEIS during the estimation of impacts, it will be assumed that all soil hauling trucks will also access the site by using the designated transportation route. There is extensive residential development adjacent to New York Routes 104 and 18. Very little development is adjacent to Balmer Road, but occasional residences are located along the rural segment of Balmer Road. The Lewiston-Porter School complex is located on the east side of Route 18 north of Pletcher Road.

Roadway and intersection analyses were performed to determine if existing geometrics and traffic controls are sufficient to accommodate existing traffic and anticipated target year traffic or if specific changes are needed. To make these determinations, traffic counts were made to determine existing traffic patterns. The counts were analyzed to determine existing traffic operations.



PROCEDURE

The impact of traffic on Routes 104, 18 and Balmer Road was determined by examining existing and target year traffic conditions. A second analyses was performed that determined the amount of additional trucks that would be necessary to reduce the current Level of Service operations of intersections and highway segments by successive levels (letter characterization).

The traffic analysis process involved:

* Data collection.
* Level of Service Analysis.
* Sight Distance Analysis.
* Findings.
* Recommendations.

Existing conditions of street geometrics, traffic controls, and traffic volumes were collected and examined. Intersection turning movement counts during peak periods obtained manually and daily traffic counts by direction and hour of the day using automatic machine counters were collected. The status of traffic operations for the Existing Condition was determined by performing a Level of Service (LOS) analysis. The analysis utilized existing traffic count data, roadway geometrics and traffic controls. The LOS analysis was performed utilizing the procedures outlined in the 1985 version of the Highway Capacity Manual published by the Transportation Research Board.

The status of traffic operations for the Target Year Condition was determined by performing a Level of Service (LOS) analysis for traffic without and with the influence of construction trucks. The analysis utilized existing traffic count data, traffic growth factors, roadway geometrics and traffic controls.

Safety conditions along the highways were considered by examining traffic accident experience and sight distances. Accidents that occurred along the three highways for the three years of 1989, 1990 and 1991 were obtained from the Niagara County Sheriff Department. Sight distances at the three intersections and at the driveways to the Lewiston-Porter School Complex were determined and analyzed using the procedures for STOPPING SIGHT DISTANCES outlined in "A POLICY on GEOMETRIC DESIGN of HIGHWAYS and STREETS", 1990, by the AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS.

TRAFFIC ANALYSIS

Traffic analysis contained herein identifies:

* Base Conditions.
* Level of Service.
* Accident Experience.
* Sight Distance Conditions.

Base Conditions

The term "Base Condition" used herein refers to the street and highway configuration and corresponding traffic operations that currently exist (1992). Other highway related parameters include road and shoulder conditions, weight limits and sight distances. Another safety parameter considered besides sight distance is accident experience.

NY 104 is oriented in a north-south direction and provides service between Interstate 190 and two other roads - NY 18 and the Robert Moses Parkway. The road is a 4 lane arterial with curbs. The road is 50 feet wide with 2 lanes of travel in each direction. Parking is not permitted along the road. The speed limit is 55 mph north of NY 265 (Military Road) and 45 mph south of NY 265. The intersection of NY 104 and NY 265 is signalized. All other streets intersecting NY 104 are controlled by STOP signs.

The road surface is concrete. Transverse and longitudinal joints have separated and heaved and the road contains frequent patch repairs at those joints. Occasional corner cracks at joints and transverse cracks exist. The road surface is in Fair condition. The legal weight limit is 80,000 lbs and no weight limit is posted during the spring season or for structures.

NY 18 (Creek Road) is oriented in a north-south direction and provides traffic service east of the Village of Lewiston, see Figure 2. The road is rural in character and has two lanes for travel with a pavement width of 24 feet. The shoulders are paved and are 5 feet wide south of NY 104 (Ridge Road) and 8 feet wide between NY 104 and Balmer Road. The speed limit is 40 mph south of NY 104, 50 mph north of NY 104 and 55 mph north of Swann Road.

The road surface south of NY 104 overpass is asphalt and contains frequent alligator cracking. It is considered to be in Good condition. Shoulders are frequently deteriorated and are in Poor condition. The legal weight limit is 80,000 lbs and no weight limit is posted during the spring season or for structures.

The road surface north of NY 104 overpass is concrete. Transverse joints have heaved and occasional transverse cracks exist. The road surface is in Fair condition. Shoulders are occasionally partially deteriorated and are in Fair condition. No weight limits are posted during the spring season.

There are no stop sign controls or signals along NY 18 from the southern end at NY 104 north to Balmer Road. Profile of the road is nearly level and passing is not restricted except for the curve immediately south of NY 104.

BALMER ROAD is a two lane rural road 24 feet wide with paved 6 foot shoulders. Typical vehicle operating speed between NY 18 and Porter Center Road is 55 mph. Traffic approaching NY 18 on Balmer Road is controlled by a STOP sign. Profile of the road is level and passing is not restricted.

The road and shoulder surface is asphalt and is in Excellent condition. The legal weight limit is 80,000 lbs and no weight limit is posted during the spring season or for structures.

PEAK HOUR TRAFFIC was counted by Bettigole Andrews & Clark, Inc. in May, 1992 during the following hours:

* Morning hours of 7:00-9:00 AM,
* Mid-Day hours of 11:30 AM-1:30 PM, and
* Afternoon hours of 4:00-6:00 PM.

These hours were selected to coincide with the peak hours of traffic on NY 18, NY 104 and Balmer Road.

The counts consisted of manual turning movements recorded by 15 minute intervals and were stratified by automobiles and trucks. Counts were conducted for a weekday at three intersections, see Figure 2:

* (1) NY 18 and Balmer Road.
* (2) Balmer Road and CWM Driveway for trucks.
* (3) NY 18 and Swann Road.

The peak hours for each intersection are:

* NY 18 and Balmer Road -
    * Morning - 7:00-8:00 AM,
    * Mid-Day - 12:00 PM-1:00 PM
    * Afternoon - 4:15-5:15 PM

* Balmer Road and CWM Drive -
    * Morning - 7:00-8:00 AM,
    * Mid-Day - 11:45 AM-12:45 PM
    * Afternoon - 4:00-5:00 PM

* NY 18 and Swann Road -
  * Morning - 7:15-8:15 AM,
  * Mid-Day - 12:00 PM-1:00 PM
  * Afternoon - 4:00-5:00 PM

Turning movements for the Base Condition for each of the morning, mid-day and afternoon peak hours are shown in Figures 3, 4 and 5 for each of the intersections listed above. The movements represent traffic maneuvers (either through or turns).

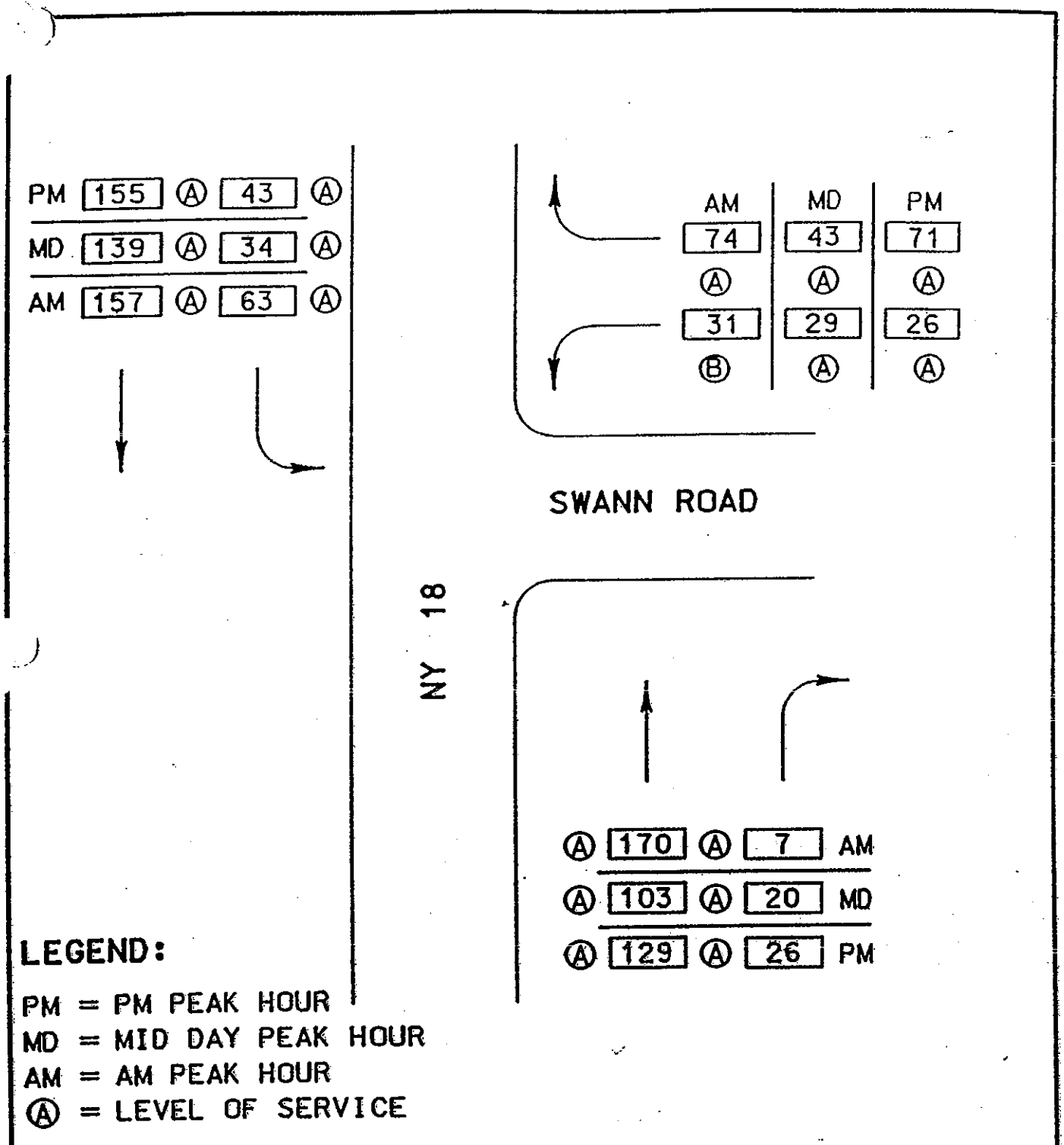
DAILY TRAFFIC COUNT data was collected for NY Routes 18 and 104 and Balmer Road by Bettigole Andrews & Clark, Inc. at five (5) locations, see Figure 2. The count data helped identify the peak hours of street traffic passing through the intersections. The traffic count data was collected during the month of May, 1992 and was recorded by roadway direction. Average weekday directional count in vehicles per day (vpd) for each count location (see Figure 4) are currently:

* NY 18
  (Location 4)
  South of NY 104 ----Northbound....3,390 vpd
  Southbound....3,213 vpd
  TOTAL.....6,603 vpd
  (Location 3)
  North of NY 104 ----Northbound....2,852 vpd
  Southbound....3,077 vpd
  TOTAL.....5,929 vpd
  (Location 1)
  South of Balmer ----Northbound....2,658 vpd
  Southbound....2,145 vpd
  TOTAL.....4,803 vpd

* NY 104
  (Location 5)
  South of NY 18 -----Northbound...11,861 vpd
  Southbound...12,911 vpd
  TOTAL.....24,772 vpd

* Balmer Road
  (Location 2)
  East of Balmer Road-----Eastbound.....1,084 vpd
  Westbound.....1,025 vpd
  TOTAL.....2,109 vpd

The peak hours and the percent of daily traffic occurring during each peak hour for each count location on NY 18 are tabulated in Table 1.



N.T.S.	CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE - 5 NY 18 - SWANN EXISTING PEAK HOUR TURNS & LOS

TABLE 1

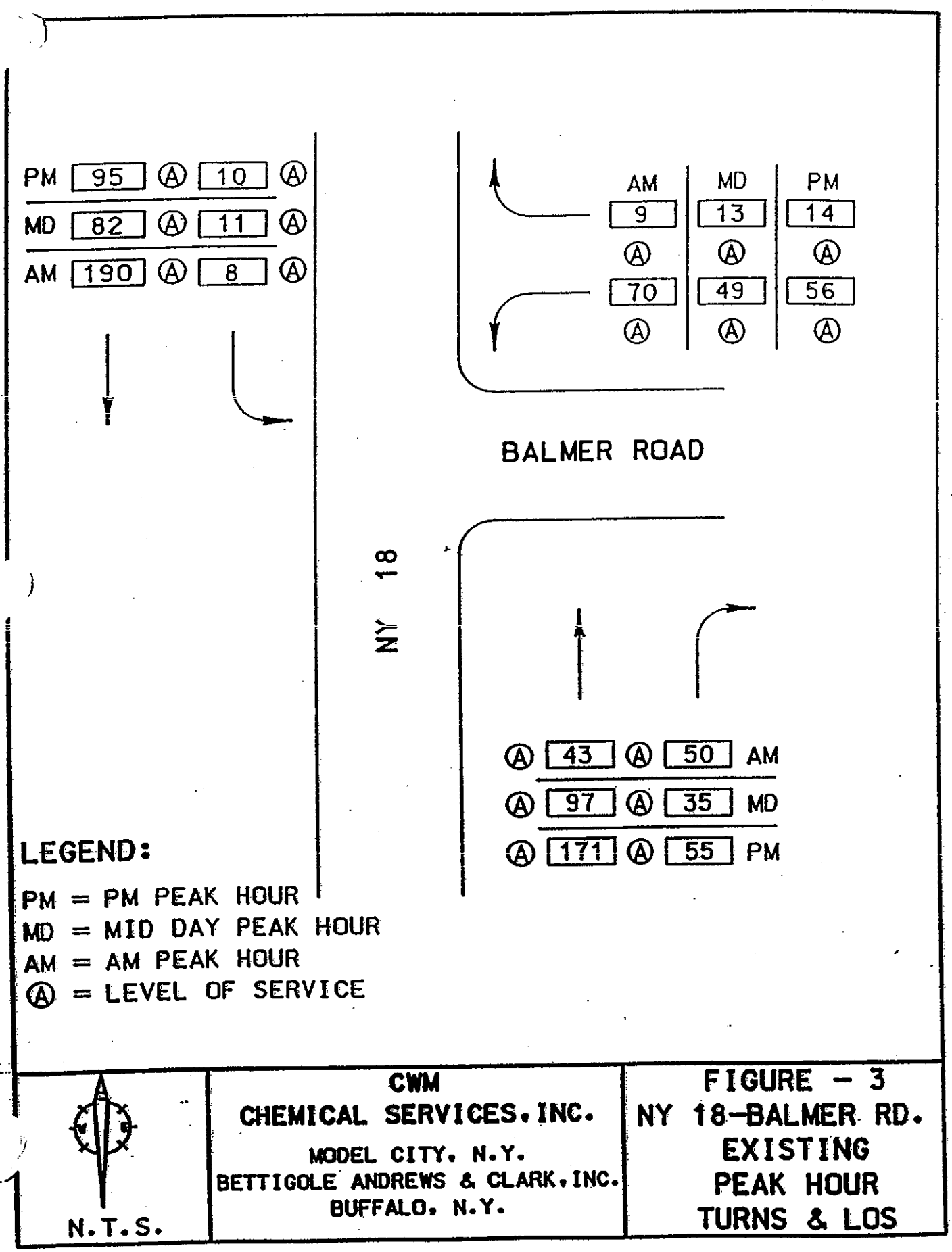
HIGHWAY SEGMENT
PEAK HOUR DATA

COUNT LOCATION	PEAK HOUR PERCENTAGE			PEAK HOUR		
	AM	MD	PM	AM	MD	PM
1	7	7	8	7:15-8:15	12:30-1:30	4:30-5:30
2	10	9	7	7:00-8:00	12:00-1:00	4:15-5:15
3	8	6	8	7:15-8:15	12:30-1:30	4:30-5:30
4	8	6	8	7:15-8:15	12:30-1:30	4:30-5:30
5	8	6	8	7:00-8:00	12:00-1:00	4:30-5:30

The counts taken in May, 1992 correspond to a time period that is representative of an average waste hauling to the landfill site, as depicted in the daily waste hauling figures listed in Table 2.

VEHICLE CLASSIFICATION information at each of the five machine count locations was collected by the Andrews & Clark, Inc. Vehicles were classified by four categories: a) automobiles, b) buses, c) single unit trucks with dual tires, and d) semi-tractor trailer trucks. The counts were conducted between the hours of 7:00-9:00 AM, 11:30 AM-1:30 PM, and 4:00-6:00 PM.

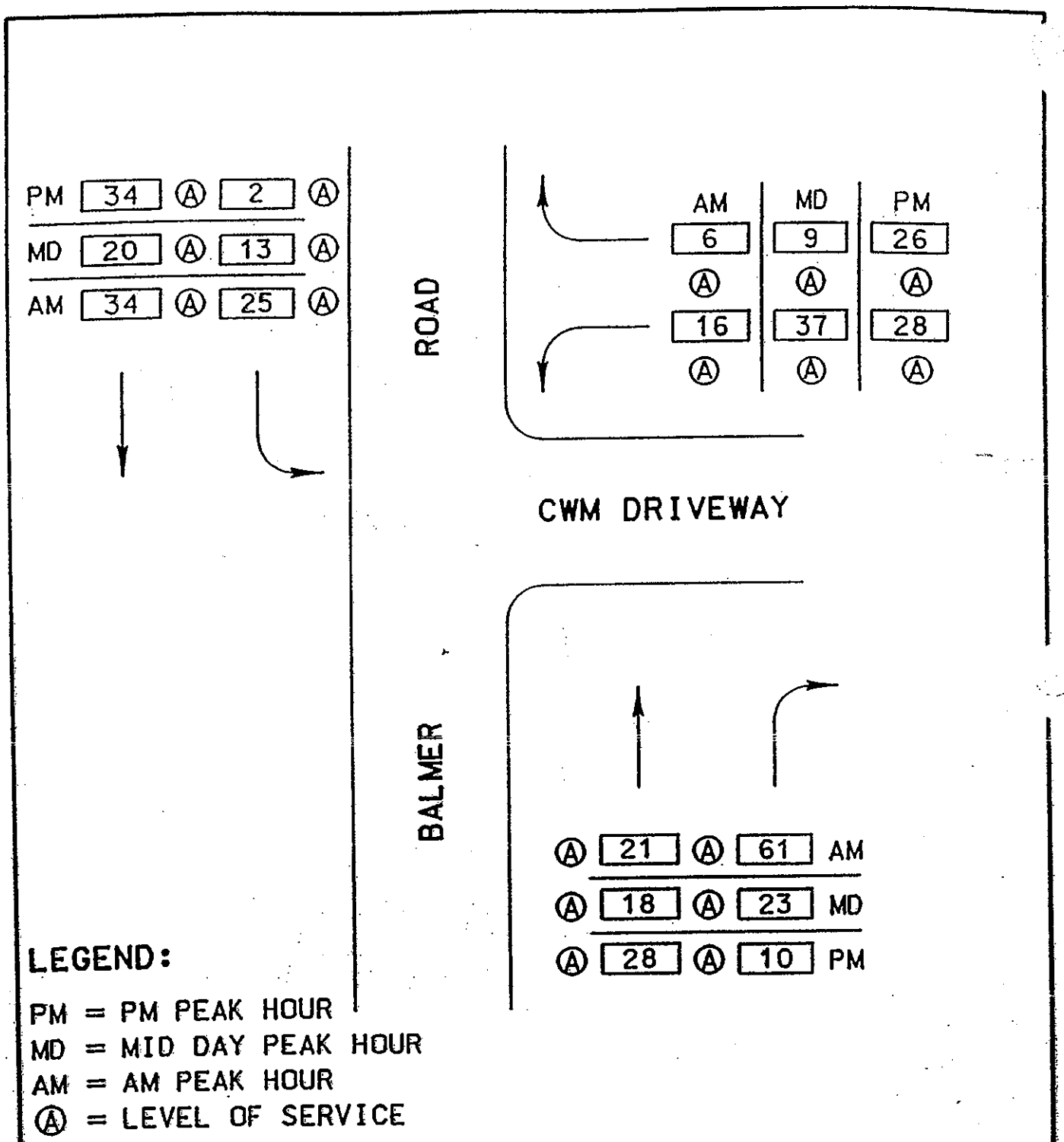
A summary of vehicle classification information for each peak hour at each count location is shown in Figures 6, 7, 8, 9 and 10.



N.T.S.

CWM
CHEMICAL SERVICES, INC.
MODEL CITY, N.Y.
BETTIGOLE ANDREWS & CLARK, INC.
BUFFALO, N.Y.

FIGURE - 3
NY 18-BALMER RD.
EXISTING
PEAK HOUR
TURNS & LOS



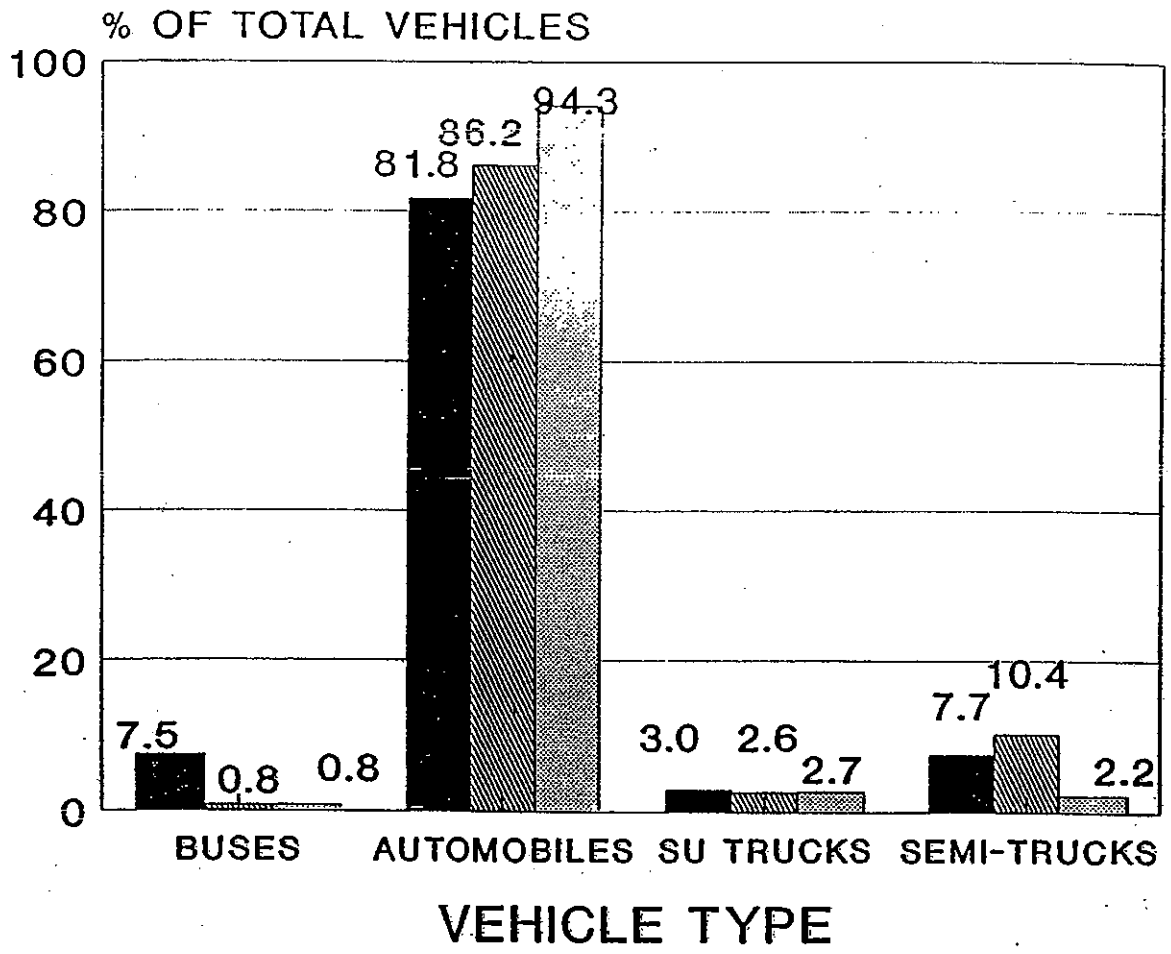
N.T.S.	CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE - 4 BALMER RD. - CWM EXISTING PEAK HOUR TURNS & LOS

TABLE 2

LOADS BY TYPE
RECEIVED AT CWM MODEL CITY
MAY, 1992

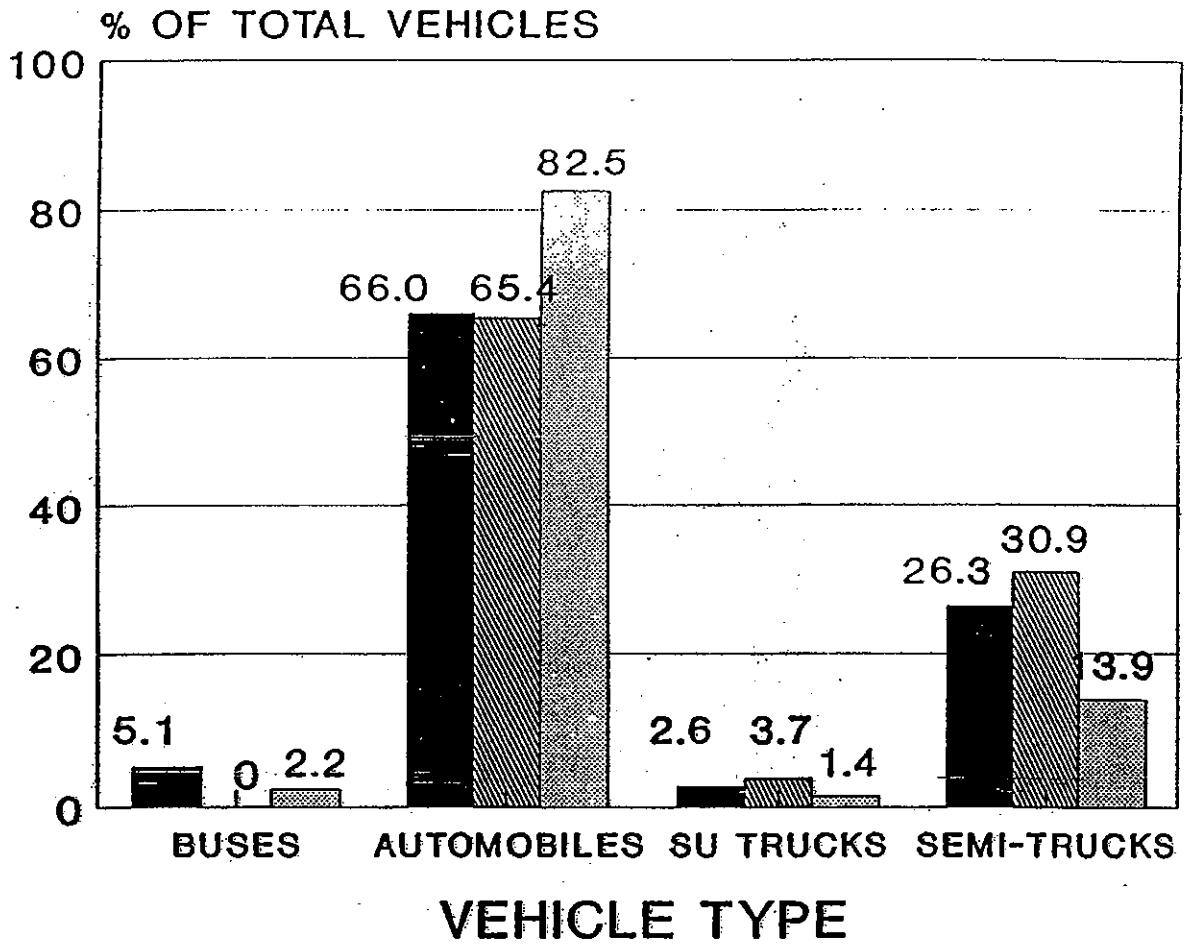
DAY	DRUMS	TANKERS	BULK RECEIPTS
1	8	0	74
2	0	0	45
3	-	-	-
4	8	1	34
5	6	0	122
6	3	1	103
7	6	2	212
8	3	0	84
9	0	0	47
10	-	-	-
11	4	1	69
12	8	0	93
13	1	1	99
14	6	1	91
15	3	2	119
16	0	0	37
17	-	-	-
18	3	2	69
19	5	1	75
20	8	1	83
21	9	0	103
22	2	0	111
23	-	-	-
24	-	-	-
25	-	-	-
26	1	0	47
27	2	0	75
28	6	0	91
29	6	0	67
30	-	-	-
31	-	-	-
TOTAL	98	13	1950

VEHICLE TYPES
ROUTE 18 - SOUTH OF BALMER ROAD



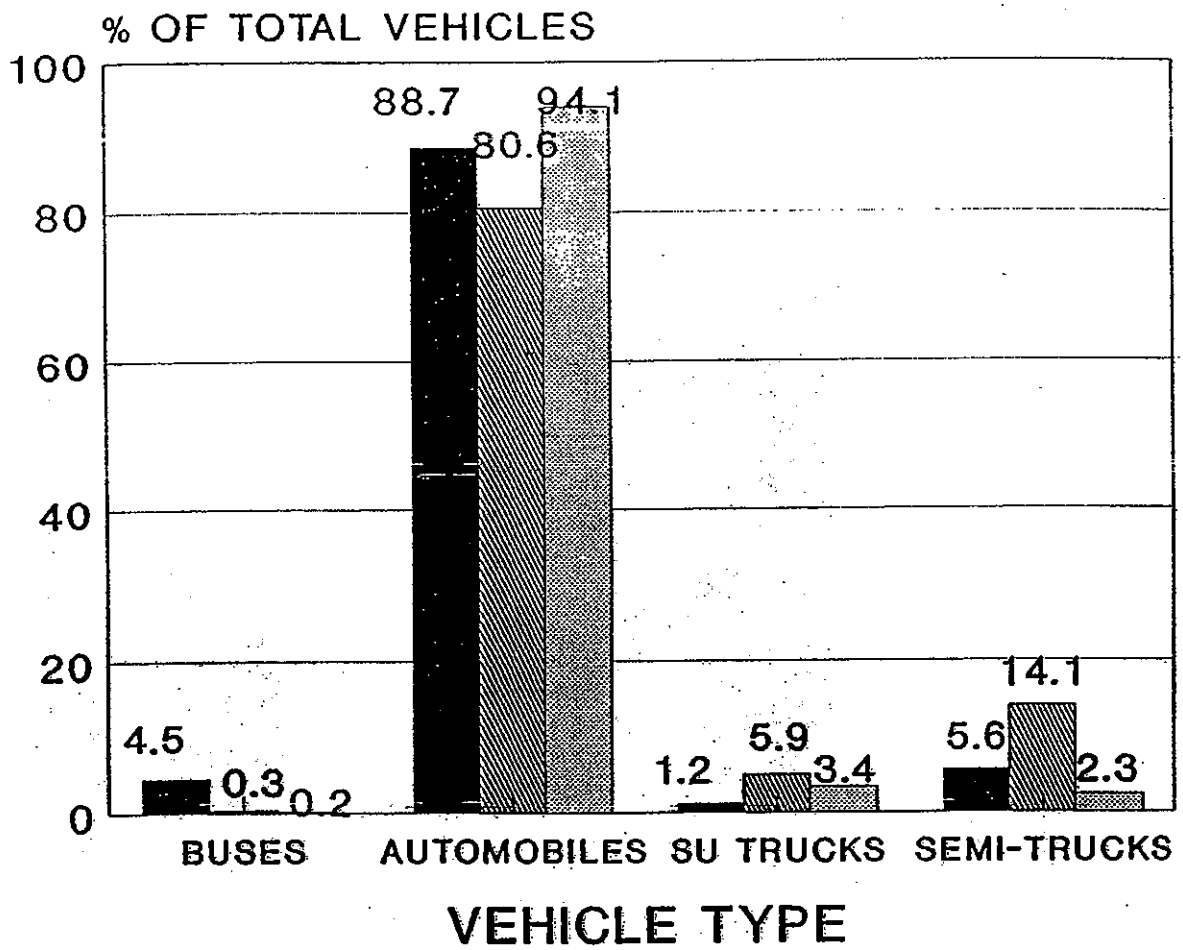
CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE – 6 EXISTING VEHICLE TYPES NY 18 SOUTH OF BALMER ROAD

VEHICLE TYPES
BALMER ROAD
EAST OF ROUTE 18



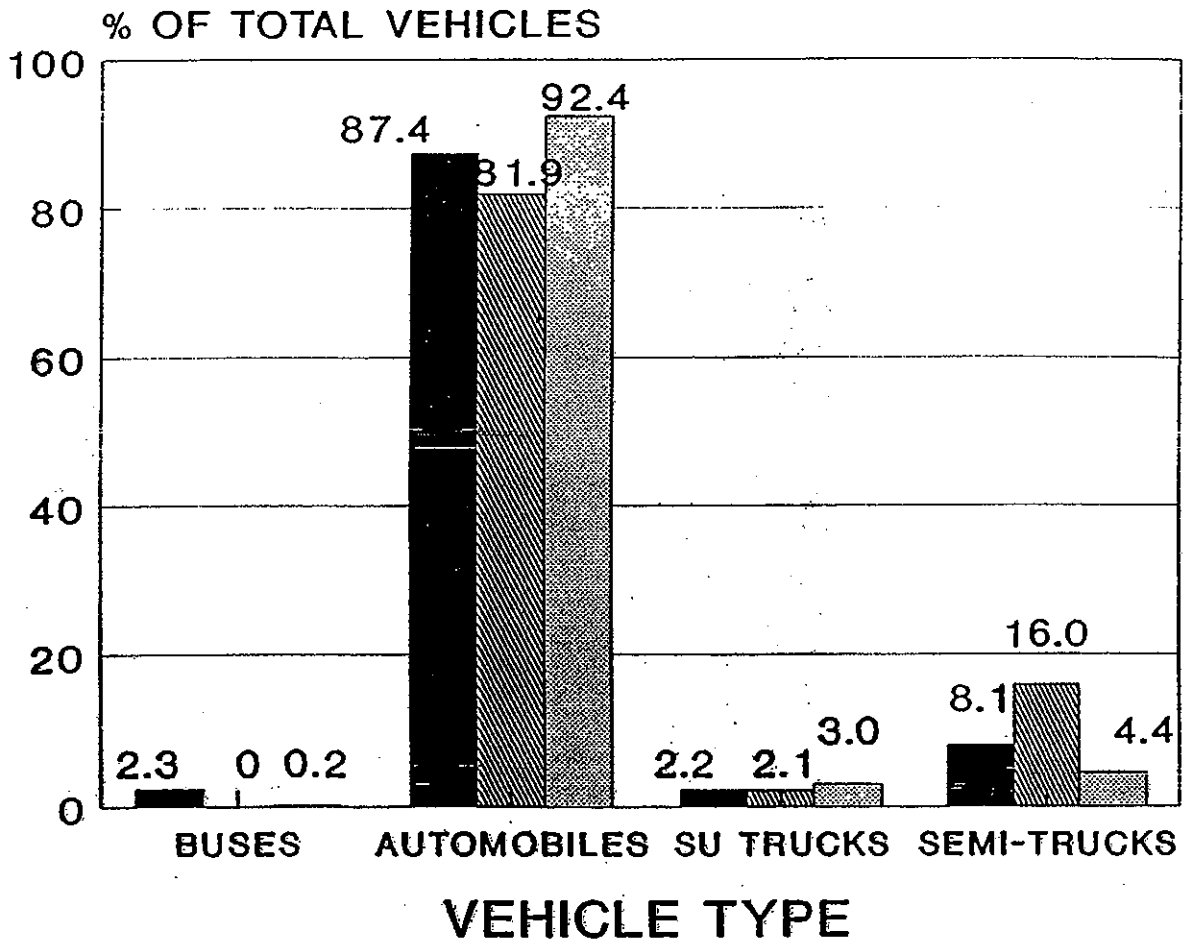
CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO. N.Y.	FIGURE – 7 EXISTING VEHICLE TYPES BALMER ROAD EAST OF ROUTE 18

VEHICLE TYPES
ROUTE 18 - NORTH OF ROUTE 104



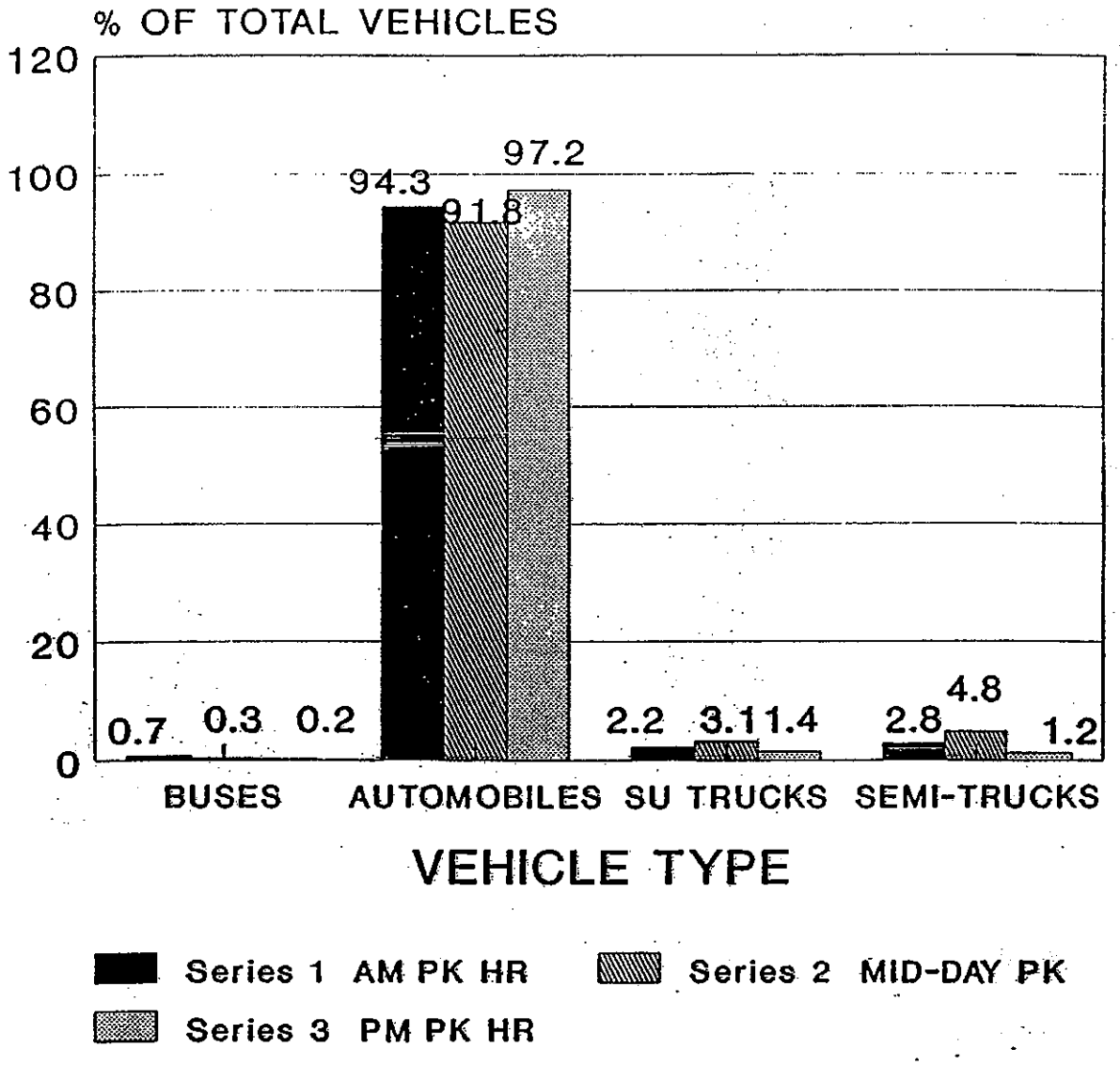
CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE – 8 EXISTING VEHICLE TYPES NY 18 NORTH OF ROUTE 104

VEHICLE TYPES
ROUTE 18 - SOUTH OF ROUTE 104



CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE – 9 EXISTING VEHICLE TYPES NY 18 SOUTH OF ROUTE 104

VEHICLE TYPES
ROUTE 104 - SOUTH OF ROUTE 18



CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE – 10 EXISTING VEHICLE TYPES NY 104 SOUTH OF ROUTE 18

Level of Service

Level of Service (LOS) analysis was performed for each of the three intersection and five machine count locations:

* Intersection of NY 18 and Swann Road.
* Intersection of Balmer Road and NY 18.
* Intersection of Balmer Road and CWM Driveway for trucks.

* Highway segment of NY 104 between NY 18 and I-190.
* Highway segment of NY 18 south of NY 104 overpass.
* Highway segment of NY 18 immediately north of NY 104 overpass.
* Highway segment of NY 18 immediately south of Balmer Road.
* Highway segment of Balmer Road east of NY 18.

The Level of Service analysis was conducted for three (3) traffic conditions:

* Existing Traffic--Traffic representing year 1992.

* Target Year Traffic without Construction--Traffic representing year 1993 without additive construction soil trucks.

* Target Year Traffic with Construction--Traffic representing year 1993 with additive construction soil trucks.

The Level of Service analysis was performed utilizing the procedures outlined in the most current version (1985) of the Highway Capacity Manual published by the Transportation Research Board. The procedures described in the Manual identify typical traffic conditions associated with different levels of service. The levels of service and corresponding traffic conditions are listed below:

Level of Service	Traffic Conditions
A	Favorable-little or no delay.
B	Good-short delays.
C	Average-average delays.
D	Some congestion-long delays.
E	Very long delays.
F	Severe congestion-extreme delays.

Level of Service "C" is considered desirable from a traffic engineering viewpoint, while "D" is considered acceptable but not desirable. Level of Service "E" is usually not acceptable and "F" is not acceptable and is generally considered from a traffic analysis viewpoint conditions needing mitigation measures.

Results of the Level of Service (LOS) analysis for the intersection Existing Traffic Condition are shown in Figures 3, 4 and 5. Existing traffic condition level of service results for highways segments are tabulated in Table 3. Computational results of the level of service analysis are contained in Appendix A.

TABLE 3

HIGHWAY SEGMENT - EXISTING (1992) LEVEL OF SERVICE

HIGHWAY SEGMENTS		PEAK HOURS		
		AM	MD	PM
RTE 18 - SOUTH OF BALMER ROAD		B	B	B
RTE 18 - NORTH OF NY 104 OVERPASS		B	B	B
RTE 18 - SOUTH OF NY 104 OVERPASS		C	B	B
BALMER ROAD - EAST OF NY 18		B	A	A
NY 104 - SOUTH OF NY 18	NB	A	A	B
	SB	C	A	A

Highway segment level of service results, Table 3, for Existing traffic conditions are generally "A" or "B". The exception being LOS "C" which occurs on two highway segments during the AM peak hour: Route 18 south of NY 104 overpass and NY 104 southbound south of NY 18.

Levels of service condition at intersections for Existing traffic conditions are "A" for all peak hours except for one situation,

See Figures 3, 4 and 5. The exception is LOS "B" at the intersection of NY 18 - Swann Road during the AM peak hour for westbound left turns. The magnitude of left turns at the stop sign and the magnitude of northbound and southbound through traffic accounts for the LOS "B" traffic operation condition.

Prior to performing level of service analysis for the Target Year traffic conditions, intersection turning movements and highway segment traffic volumes for the three (3) peak hours (AM, MID_DAY and PM) were developed for two traffic scenarios:

* Target Year (1993) - <u>without</u> construction truck traffic added to the transportation route.
* Target Year (1993) - <u>with</u> construction truck traffic added to the transportation route.

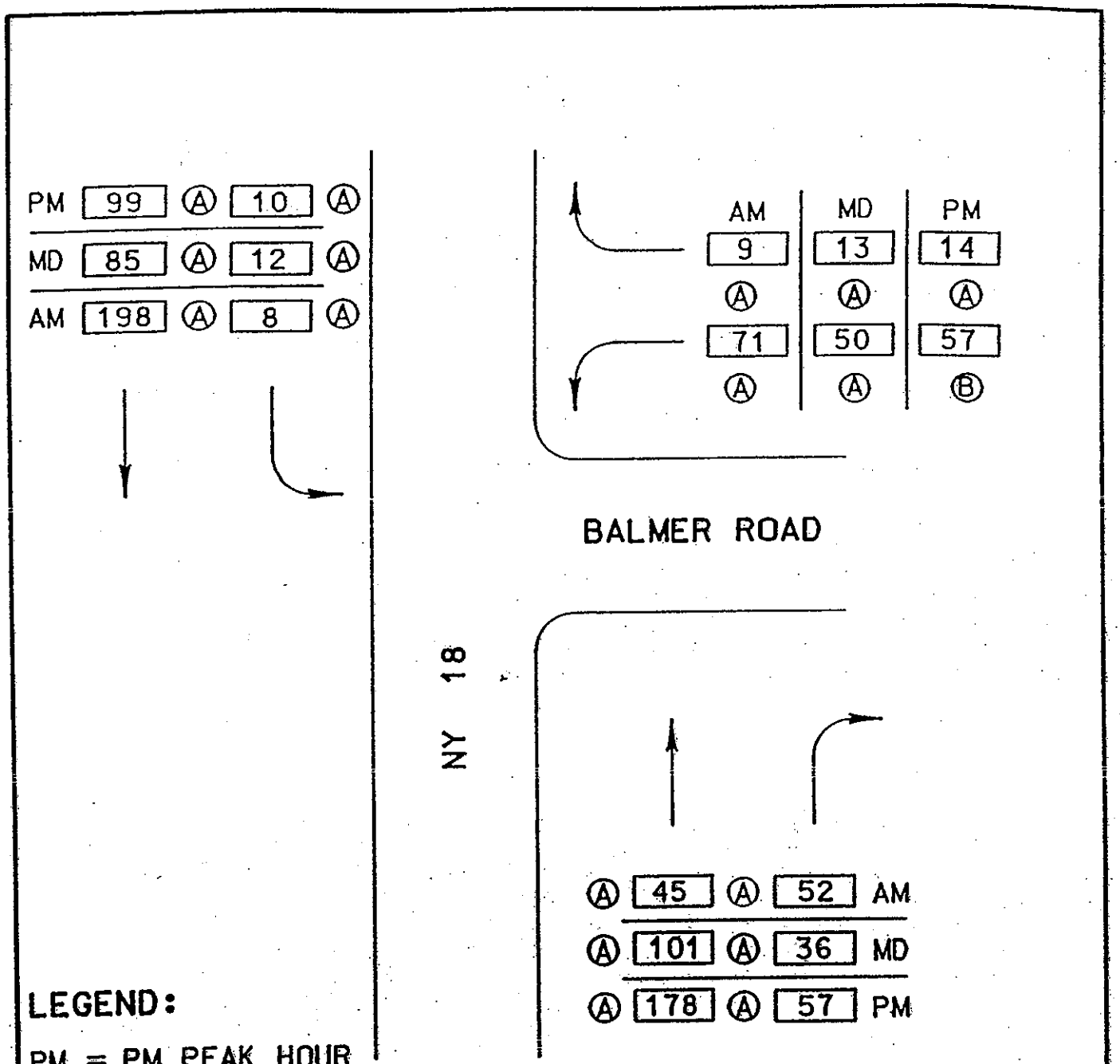
The process of developing Target Year turning movements and highway segment traffic volumes for each of the two traffic scenarios involved increasing the Existing 1992 turns and volumes to represent the target year turns by applying an annual traffic growth factor. The growth factor was developed for the roads considered based on existing count data collected and historical count data supplied by the New York State Department of Transportation. Annual traffic growth rates determined from the comparisons of counts for each street were:

* NY 104 . . . . . 3%
* NY 18 . . . . . 4%
* Balmer Road 2%

The process of developing turning movements and highway segment traffic for the appropriate target year also involved superimposing (adding) site generated construction truck trips to the adjusted existing turns and segment traffic to reflect the construction phase of the proposed development. The site generated truck trips (33 trucks per hour in each direction) were assigned to the transportation route. The assigned site generated construction truck trips represent additive traffic to the overall street system and were added to the adjusted existing traffic to yield total traffic for the construction phase of the project.

AM, MID-DAY and PM peak hour turning movements along with results of the Level of Service analysis for the <u>*Target Year*</u> (1993) - <u>*without construction truck traffic*</u> are shown in Figures 11, 12, and 13. This is considered 1993 Background traffic.

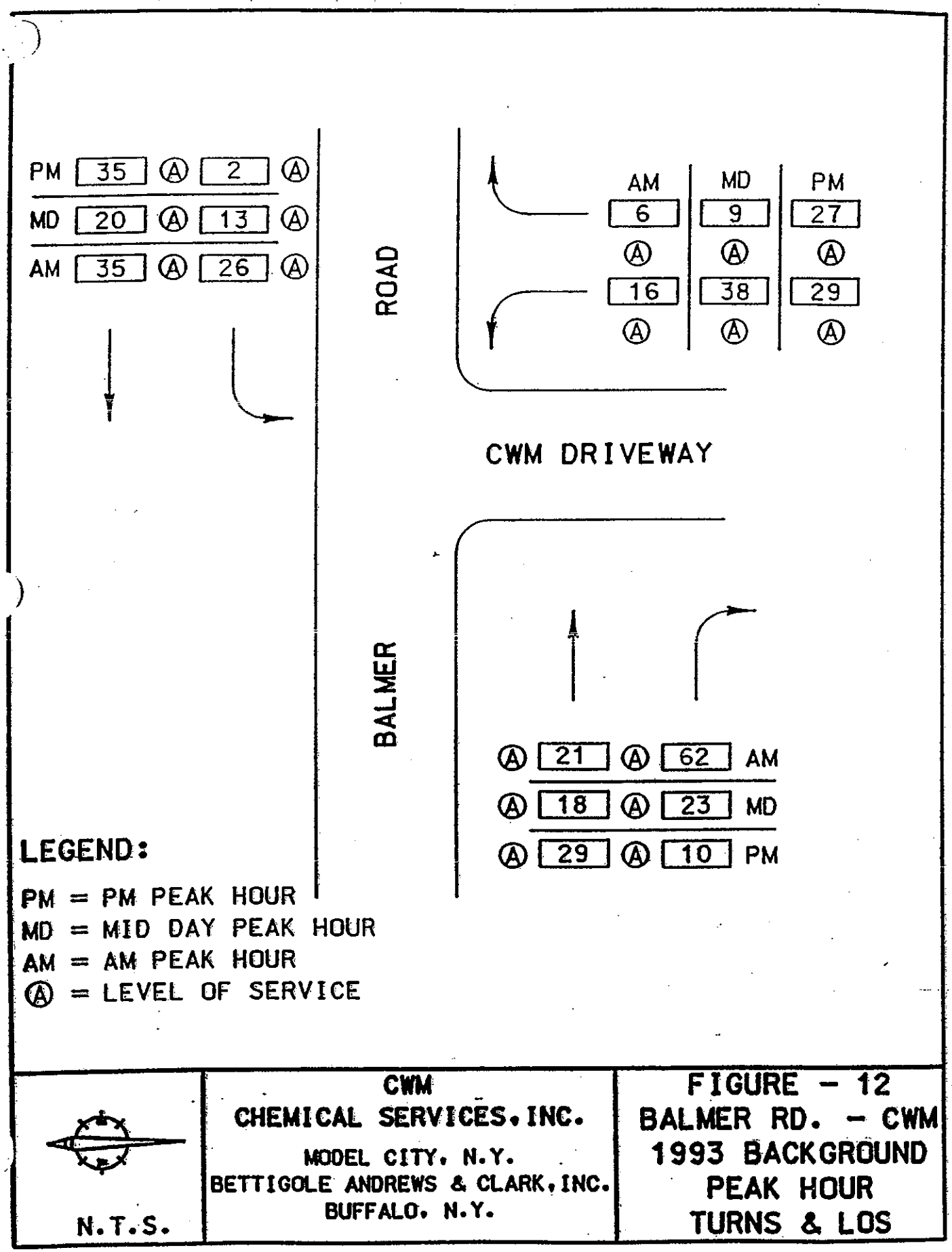
AM, MID-DAY and PM peak hour turning movements along with results of the Level of Service analysis for the <u>*Target Year*</u> (1993) - <u>*with construction truck traffic*</u> are shown in Figures 14, 15 and 16. This is considered 1993 Background plus soil (construction) truck traffic.



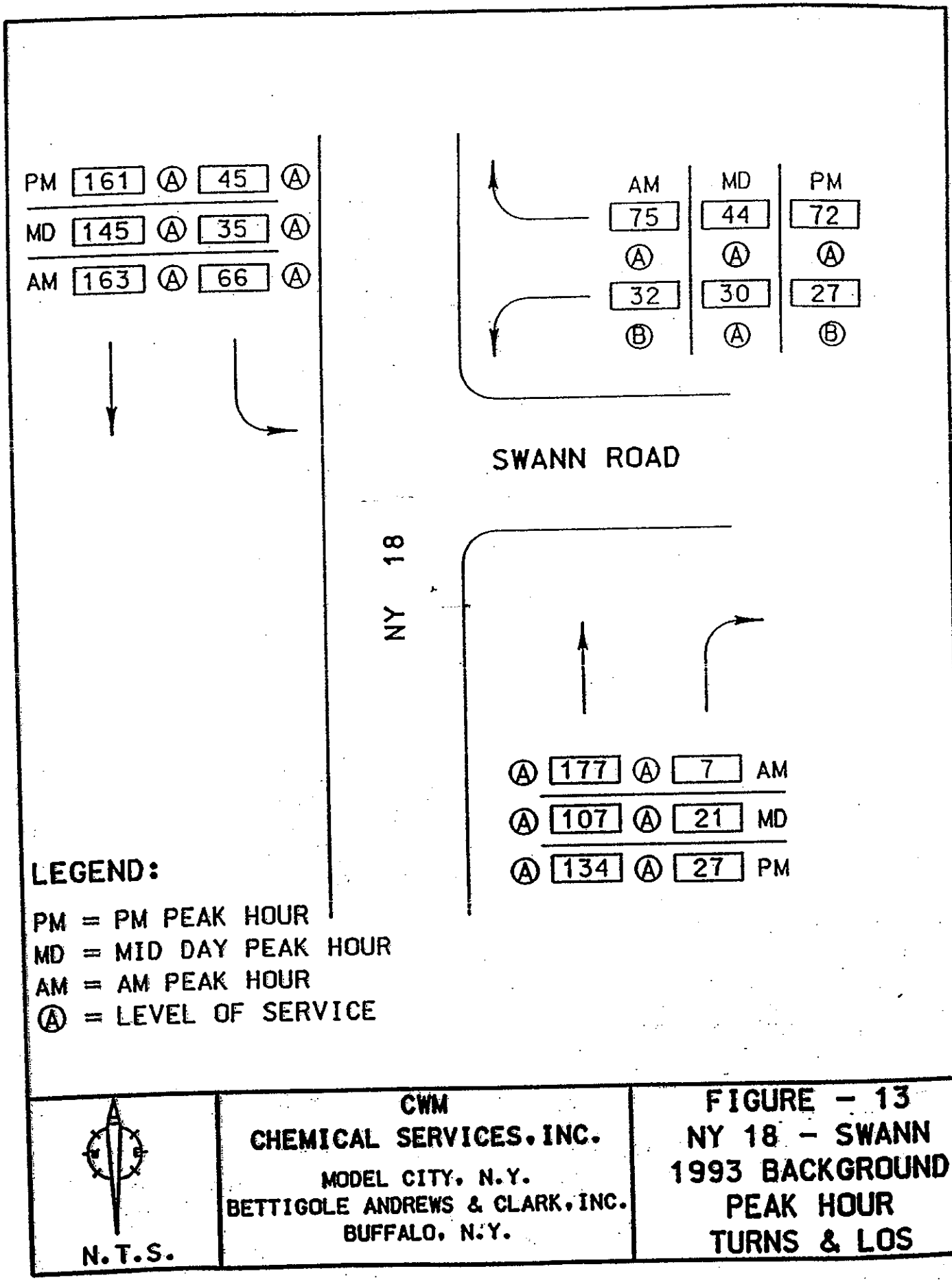
N.T.S.

CWM
CHEMICAL SERVICES, INC.
MODEL CITY, N.Y.
BETTIGOLE ANDREWS & CLARK, INC.
BUFFALO, N.Y.

FIGURE - 11
NY 18-BALMER RD.
1993 BACKGROUND
PEAK HOUR
TURNS & LOS



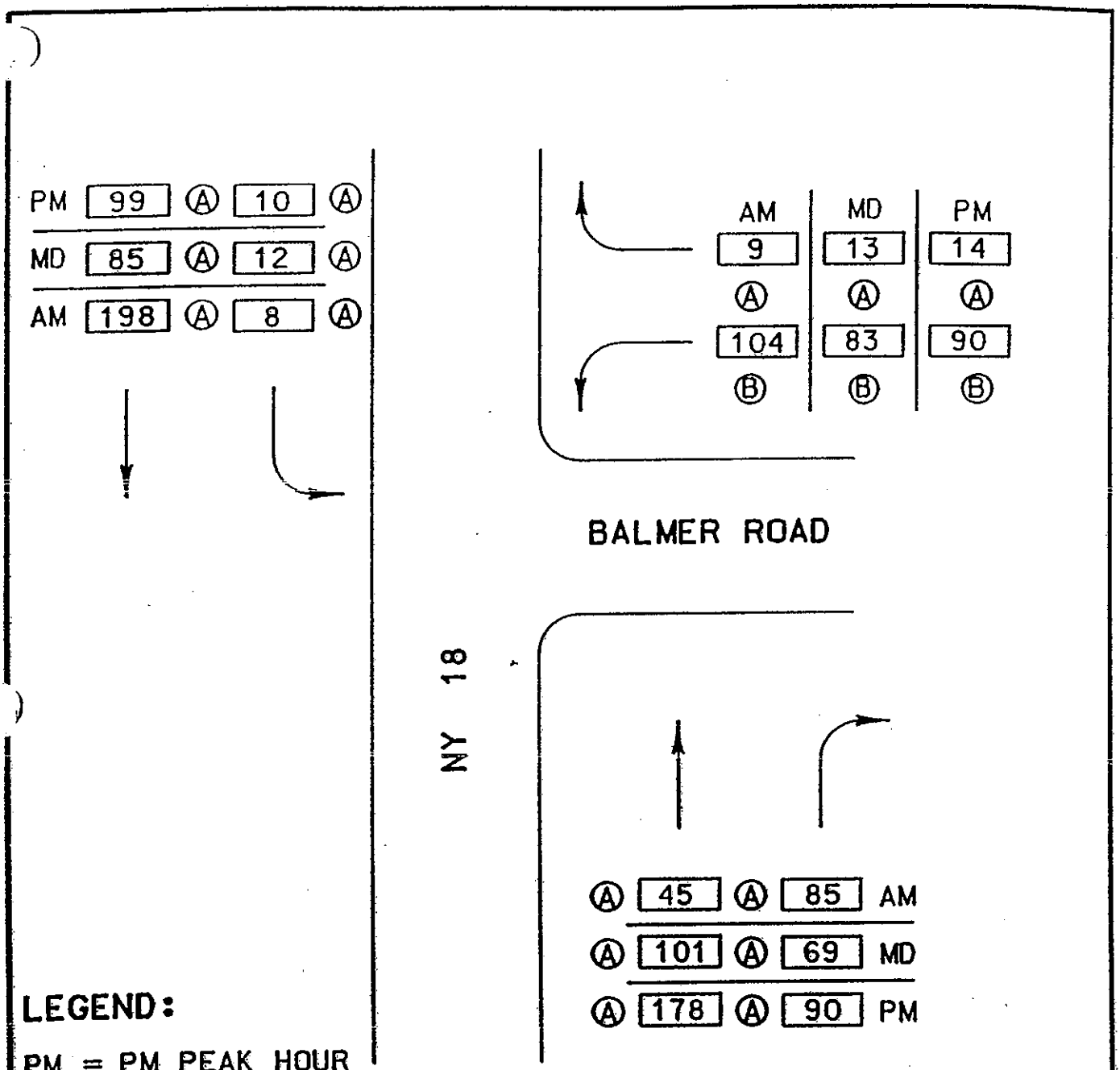
N.T.S.	CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE - 12 BALMER RD. - CWM 1993 BACKGROUND PEAK HOUR TURNS & LOS



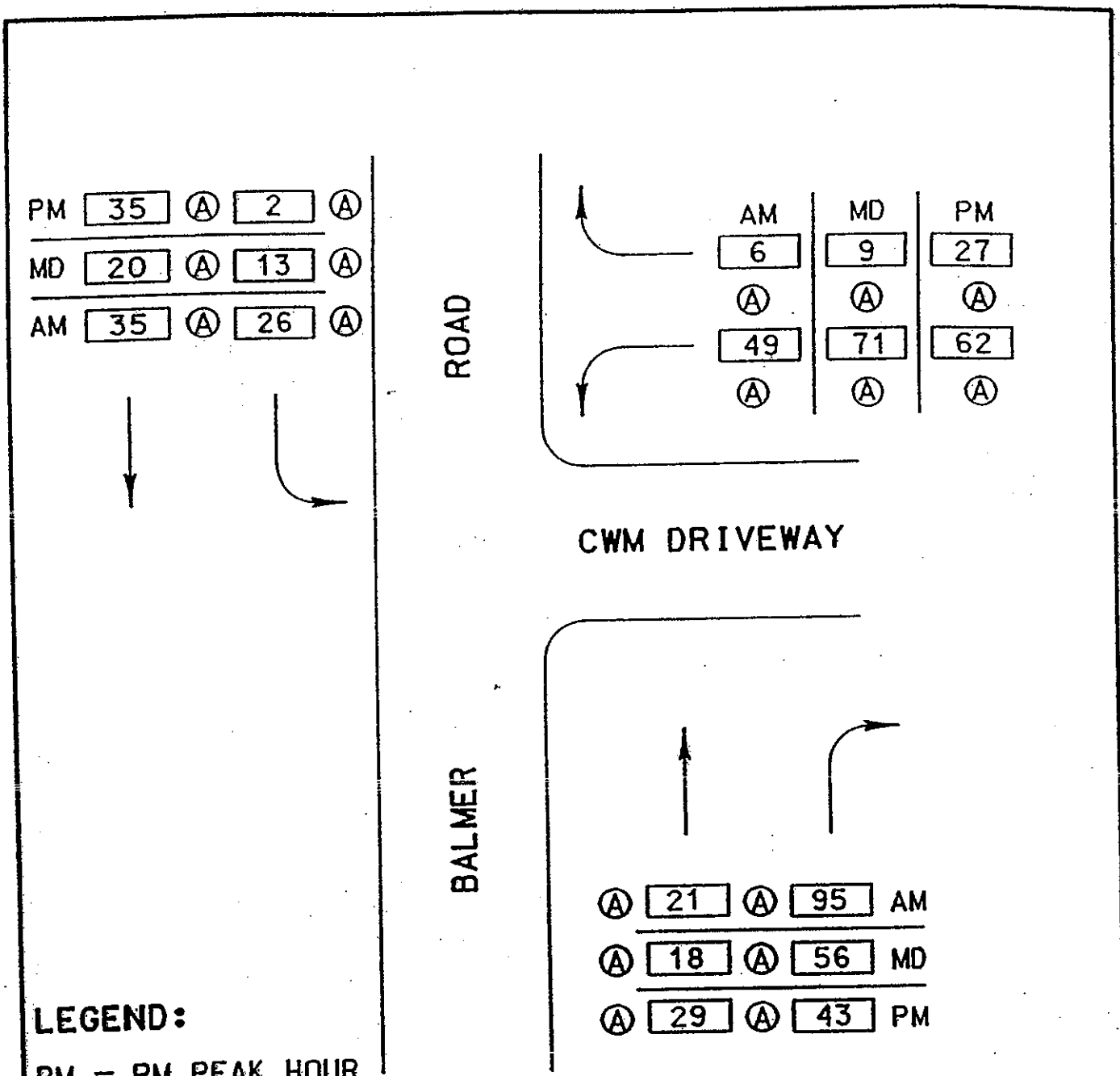
N.T.S.

CWM
CHEMICAL SERVICES, INC.
MODEL CITY, N.Y.
BETTIGOLE ANDREWS & CLARK, INC.
BUFFALO, N.Y.

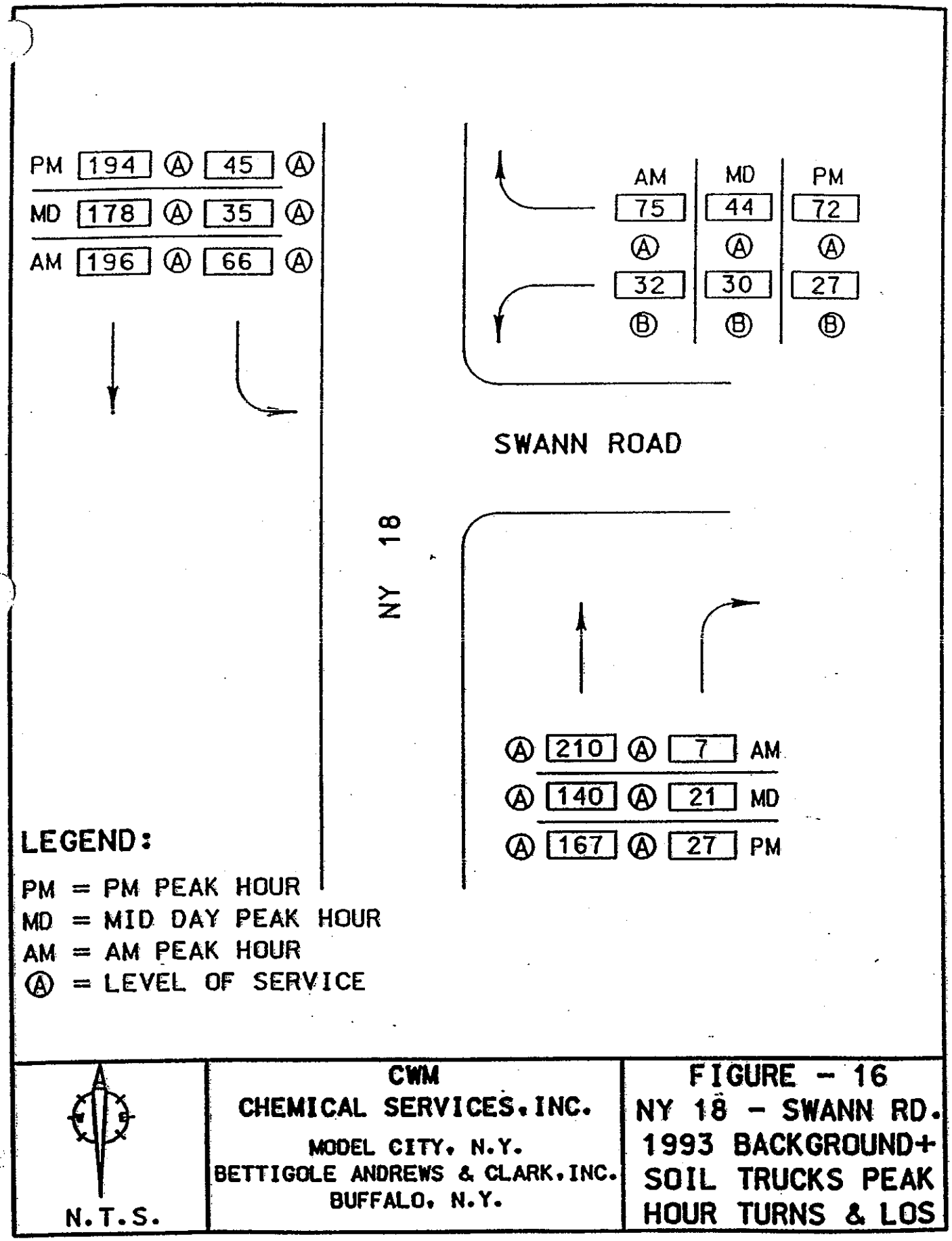
FIGURE - 13
NY 18 - SWANN
1993 BACKGROUND
PEAK HOUR
TURNS & LOS



N.T.S.	CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE - 14 NY 18-BALMER RD. 1993 BACKGROUND+ SOIL TRUCKS PEAK HOUR TURNS & LOS



N.T.S.	CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE - 15 BALMER RD. - CWM 1993 BACKGROUND+ SOIL TRUCKS PEAK HOUR TURNS & LOS



N.T.S.	CWM CHEMICAL SERVICES, INC. MODEL CITY, N.Y. BETTIGOLE ANDREWS & CLARK, INC. BUFFALO, N.Y.	FIGURE - 16 NY 18 - SWANN RD. 1993 BACKGROUND+ SOIL TRUCKS PEAK HOUR TURNS & LOS

Levels of service condition at intersections for 1993 Background traffic conditions are "A" for all peak hours except for two situations, see Figures 11, 12 and 13. The exceptions are LOS "B". They occur at the intersection of NY 18 - Swann Road during the AM peak hour for westbound left turns and at the intersection NY 18 - Balmer Road during the PM peak hour for westbound left turns. The magnitude of left turns at the stop sign and the magnitude of northbound and southbound through traffic accounts for the LOS "B" traffic operation condition.

Levels of service condition at intersections for 1993 Background plus soil (construction) truck traffic conditions are "A" for all peak hours except for two left turn movements, see Figures 14, 15 and 16. The exceptions are LOS "B". They occur at the intersections of NY 18 - Swann Road and NY 18 - Balmer Road during the AM, MID_DAY and PM peak hours for westbound left turns. The magnitude of left turns at the stop sign and the magnitude of northbound and southbound through traffic accounts for the LOS "B" traffic operation condition.

Target year 1993 Background traffic condition level of service results for highway segments are tabulated in Table 4. Computational results of the level of service analysis for the intersections and road segments for the target Year 1993 Background traffic conditions without construction trucks are contained in Appendix B.

TABLE 4

HIGHWAY SEGMENT - 1993 BACKGROUND - LEVEL OF SERVICE

HIGHWAY SEGMENTS		PEAK HOURS		
		AM	MD	PM
RTE 18 - SOUTH OF BALMER ROAD		B	B	B
RTE 18 - NORTH OF NY 104 OVERPASS		B	B	B
RTE 18 - SOUTH OF NY 104 OVERPASS		C	B	B
BALMER ROAD - EAST OF NY 18		B	A	A
NY 104 - SOUTH OF NY 18	NB	A	A	C
	SB	C	A	A

Highway segment level of service results, Table 4, for 1993 Background traffic conditions are generally "A" or "B". The exception being LOS "C" which occurs on two highway segments: Route 18 south of NY 104 overpass and NY 104 southbound south of NY 18 during the AM peak hour, and NY 104 northbound south of NY 18 during the PM peak hour.

Target year 1993 Background plus soil truck traffic condition level of service results for highway segments are tabulated in Table 5. Computational results of the level of service analysis for the Target Year 1993 traffic condition with construction trucks for the intersections and road segments are contained in Appendix C.

TABLE 5

HIGHWAY SEGMENT - 1993 BACKGROUND + SOIL TRUCKS - LEVEL OF SERVICE

HIGHWAY SEGMENTS		PEAK HOURS		
		AM	MD	PM
RTE 18 - SOUTH OF BALMER ROAD		B	B	B
RTE 18 - NORTH OF NY 104 OVERPASS		C	B	C
RTE 18 - SOUTH OF NY 104 OVERPASS		C	C	C
BALMER ROAD - EAST OF NY 18		B	B	B
NY 104 - SOUTH OF NY 18	NB	A	B	C
	SB	C	B	A

Highway segment level of service results, Table 5, for 1993 Background plus soil (construction) truck traffic conditions are generally "A" or "B". The exception being LOS "C" which occurs on three highway segments: Route 18 north of NY 104 overpass during the AM and PM peak hours; Route 18 south of NY 104 overpass; and NY 104 southbound south of NY 18 during the AM peak hour, and NY 104 northbound south of NY 18 during the PM peak hour.

Accident Experience

Accident data was obtained from the Niagara County Sheriff Department for the three major highways of the designated transportation route: NY 104, NY 18 and Balmer Road. The accident data covers the three years 1989, 1990 and 1991. A summary of the accident occurrences is contained in Table 6.

The accident occurrence over the past three years along the designated transportation route is widely dispersed. The only possible focal point of accidents is at the intersection of NY 104 and NY 265 during the last year, 1991. Most of the accidents at this location involved left turning vehicles from NY 104 onto NY 265 - failure to yield right of way. Others were rear-end accidents on the NY 265 approach to the intersection.

Accidents at the intersection of NY 18 and Swann were primarily single vehicles that did not stop at the stop sign on Swann and hit the guide rail on the west side of NY 18. Other accidents along NY 18 involved turning vehicles that did not yield right of way to oncoming traffic or vehicles rear-ending turning vehicles.

The distribution of accidents by season of the year is:

Winter (Nov., Dec., Jan., Feb., March)	43%
Non-Winter (All other months)	57%

Accidents occurring by lighting conditions - daylight vs darkness were as follows:

Daylight	57%
Darkness	43%

The pattern of accidents by day of the week is:

Sunday	12%
Monday	7%
Tuesday	17%
Wednesday	11%
Thursday	10%
Friday	24%
Saturday	19%

The overall pattern of accidents by season of year, lighting conditions and day of week do not vary significantly from normal traffic volume patterns. Information on the accident reports indicate there is not a particular problem with the highway system. The preponderance of the accidents occurred due to driver failure to yield right of way when sufficient sight distance existed or did not have the vehicle under control.

TABLE 6

ACCIDENT OCCURRENCES

LOCATIONS	YEAR 1989 TYPE PD*	YEAR 1989 TYPE BI*	YEAR 1990 TYPE PD	YEAR 1990 TYPE BI	YEAR 1991 TYPE PD	YEAR 1991 TYPE BI
INTERSECTIONS						
NY 104/NY 265	3		1		6	2
NY 18/NY 104 OVERPASS	2		2		1	
NY 18/SWANN	1	1	1		2	
NY 18/PLETCHER	2	2	2			
NY 18/LEW-PORT SCHOOL DRIVES	1	1	1	1		
NY 18/CALKINS	1					2
NY 18/BALMER	1				1	1
BALMER/LUTTS	2					
SUBTOTAL	**13**	**4**	**7**	**1**	**10**	**5**
HIGHWAY SEGMENTS						
NY 104					2	
NY 18 - SOUTH OF NY 104					1	
NY 18 - NY 104 TO SWANN	2		2	1	1	2
NY 18 - SWANN TO BALMER		1	2		4	
SUBTOTAL	**2**	**1**	**4**	**1**	**8**	**2**
TOTAL	**15**	**5**	**11**	**2**	**18**	**7**

* PD = Property Damage only, BI = Bodily Injury

Sight Distance

Sight distance at the intersections of Balmer Road with NY 18, the existing drive to the CWM site with Balmer Road, NY 18 with Swann Road and NY 18 with Lewiston-Porter School complex driveways were determined and analyzed. Because of the level terrain and clear shoulder widths, vehicles exiting the existing driveways and streets onto NY 18 and Balmer Road have minimum sight distances of 1000 feet.

Guidelines for STOPPING SIGHT DISTANCES are defined in **A POLICY on GEOMETRIC DESIGN of HIGHWAYS and STREETS**, 1990, prepared by the AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO). Stopping Sight Distances recommended for operating speeds determined for NY 104, NY 18 and Balmer Road are as follows:

OPERATING SPEEDS (mph)	RECOMMENDED STOPPING SIGHT DISTANCES (ft)
40	325
45	400
50	475
55	550

Based on comparisons of measured with recommended, adequate Stopping Sight Distances exist along NY 104, NY 18 and Balmer Road at the four locations considered for this study.

ADDITIVE TRUCK TRAFFIC

The condition when traffic operations level of service would decrease succeeding levels of service from the 1993 Background traffic conditions was investigated for the designated transportation route. The number of additional trucks required to reduce the level of service for each of the five highway segments and three intersections considered was determined. This was performed for all three peak hour conditions: AM, MID-DAY and PM.

The results are expressed in a range of values. Traffic operations are expected to change at or about that range, not precisely at some specific number. The results for Highway Segments - AM peak hour are contained in Table 7, those for the MID-DAY peak hour in Table 8, and those for the PM peak hour in Table 9. The results for Intersection Critical Approaches (those traffic movements controlled by STOP signs) - AM peak hour are contained in Table 10, those for MID_DAY peak hour in Table 11, and those for the PM peak hour in Table 12.

The additive truck analysis indicate a wide range of trucks can change the level of service for a highway segment or intersection approach. The range is contingent on the Level of Service for 1993 Background traffic and the magnitude of traffic depicting a particular level of service. In some instances, very little traffic is needed to change the level of service, while for other circumstances, based on the 1993 Background traffic volume, much more traffic is required to be added before the level of service changes.

Results for highway segments indicate that the most critical condition, in terms of the fewest number of trucks added to the transportation route that changes level of service, is for northbound NY 104 during the MID-DAY peak hour (see Table 8) and for NY 18 south of NY 104 Overpass during the PM peak hour (see Table 9). A range of 10 - 20 trucks is sufficient to change the level of service. As a point of reference for traffic operations that cause concern for traffic engineering improvements, Level of Service "D" would occur if 50 - 60 trucks were added during the AM peak hour for southbound NY 104, otherwise a significant number of trucks would need to be added to the transportation route to cause Level of Service "D" conditions.

Similar results shown in Tables 10 - 12 for critical intersection approaches, indicate 5 - 15 trucks would cause a change in level of service during the AM and PM peak hours for westbound traffic on Balmer Road at NY 18. Otherwise, a minimum of 80 - 90 trucks would need to added to the transportation route per hour to cause Level of Service "D" traffic operation conditions for a critical intersection approach.

TABLE 7

HIGHWAY SEGMENT – AM PEAK HOUR
ADDITIONAL TRUCKS TO CHANGE LEVEL OF SERVICE
FOR 1993 BACKGROUND TRAFFIC

HIGHWAY SEGMENT	1993 BACKGROUND TRAFFIC LOS	ADDITIONAL TRUCKS TO CHANGE LOS TO				
		B	C	D	E	F
NY 104 – MULTILINE						
NB – SOUTH OF NY 18	A	105–115	270–280	400–420	500–530	710–740
SB – SOUTH OF NY 18	C			50–60	210–220	390–410
RTE 18 – SOUTH OF 104 OVERPASS	C			150–160	470–490	910–960
RTE 18 – NORTH OF 104 OVERPASS	B		20–30	200–210	490–510	920–970
RTE 18 – SOUTH OF BALMER ROAD	B		70–80	260–280	550–580	1000–1050
BALMER ROAD – EAST OF NY 18	B		75–85	210–220	580–610	1050–1100

TABLE 8

HIGHWAY SEGMENT – MID–DAY PEAK HOUR
ADDITIONAL TRUCKS TO CHANGE LEVEL OF SERVICE
FOR 1993 BACKGROUND TRAFFIC

HIGHWAY SEGMENT	1993 BACKGROUND TRAFFIC LOS	ADDITIONAL TRUCKS TO CHANGE LOS TO				
		B	C	D	E	F
NY 104 – MULTILINE						
NB – SOUTH OF NY 18	A	10–20	160–170	310–330	440–460	610–640
SB – SOUTH OF NY 18	A	20–30	175–185	310–330	440–460	620–650
RTE 18 – SOUTH OF 104 OVERPASS	B		60–70	240–250	520–550	970–1020
RTE 18 – NORTH OF 104 OVERPASS	B		90–100	270–280	560–590	1010–1060
RTE 18 – SOUTH OF BALMER ROAD	B		110–120	300–310	580–610	1040–1090
BALMER ROAD – EAST OF NY 18	A	20–30	140–150	360–380	650–680	1100–1150

TABLE 9

HIGHWAY SEGMENT – PM PEAK HOUR
ADDITIONAL TRUCKS TO CHANGE LEVEL OF SERVICE
FOR 1993 BACKGROUND TRAFFIC

HIGHWAY SEGMENT	1993 BACKGROUND TRAFFIC LOS	ADDITIONAL TRUCKS TO CHANGE LOS TO				
		B	C	D	E	F
NY 104 – MULTILINE						
NB – SOUTH OF NY 18	C			135–145	260–270	440–460
SB – SOUTH OF NY 18	A	50–60	210–220	350–370	480–500	670–700
RTE 18 – SOUTH OF 104 OVERPASS	B		10–20	195–205	480–500	920–970
RTE 18 – NORTH OF 104 OVERPASS	B		45–55	230–240	510–540	950–1000
RTE 18 – SOUTH OF BALMER ROAD	B		110–120	260–280	570–600	1020–1070
BALMER ROAD – EAST OF NY 18	A	55–65	165–195	370–390	660–710	1130–1180

TABLE 10

HIGHWAY INTERSECTION CRITICAL APPROACH – AM PEAK HOUR
ADDITIONAL TRUCKS TO CHANGE LEVEL OF SERVICE
FOR 1993 BACKGROUND TRAFFIC

HIGHWAY INTERSECTION CRITICAL APPROACH	1993 BACKGROUND TRAFFIC LOS	TRUCKS ADDED TO TRANSPORTATION ROUTE TO CHANGE LOS TO:				
		B	C	D	E	F
BALMER ROAD / CWM DRIVE NORTHBOUND APPROACH	A	70–80	110–120	150–160	190–200	240–250
BALMER ROAD / NY 18 WESTBOUND APPROACH	A	5–15	40–50	80–90	125–135	170–180
NY 18 / SWANN ROAD WESTBOUND APPROACH	A	80–90	240–250	400–420	620–650	960–1000

TABLE 11

HIGHWAY INTERSECTION CRITICAL APPROACH – MID–DAY PEAK HOUR
ADDITIONAL TRUCKS TO CHANGE LEVEL OF SERVICE
FOR 1993 BACKGROUND TRAFFIC

HIGHWAY INTERSECTION CRITICAL APPROACH	1993 BACKGROUND TRAFFIC LOS	TRUCKS ADDED TO TRANSPORTATION ROUTE TO CHANGE LOS TO:				
		B	C	D	E	F
BALMER ROAD / CWM DRIVE NORTHBOUND APPROACH	A	70–80	110–120	155–165	200–210	240–250
BALMER ROAD / NY 18 WESTBOUND APPROACH	A	35–45	75–85	120–130	165–175	205–215
NY 18 / SWANN ROAD WESTBOUND APPROACH	A	200–210	360–380	540–570	680–720	1160–1210

TABLE 12

HIGHWAY INTERSECTION CRITICAL APPROACH – PM PEAK HOUR
ADDITIONAL TRUCKS TO CHANGE LEVEL OF SERVICE
FOR 1993 BACKGROUND TRAFFIC

HIGHWAY INTERSECTION CRITICAL APPROACH	1993 BACKGROUND TRAFFIC LOS	TRUCKS ADDED TO TRANSPORTATION ROUTE TO CHANGE LOS TO:				
		B	C	D	E	F
BALMER ROAD / CWM DRIVE NORTHBOUND APPROACH	A	90–100	140–150	180–190	220–230	260–270
BALMER ROAD / NY 18 WESTBOUND APPROACH	A	5–15	40–50	80–90	125–135	170–180
NY 18 / SWANN ROAD WESTBOUND APPROACH	A	180–190	340–360	520–540	720–760	1160–1210

FINDINGS

Level of service analysis for the three intersections and five highway segments indicates that all intersections and highway segments are operating at acceptable levels of service during all three peak hours considered for both Existing and 1993 Background traffic conditions. Some level of service changes did occur when construction trucks were added to the 1993 Background traffic, but the change was not more than one level and in no situation was the change more than Level of Service "C". The level of service results varied between LOS "A" to "C". These results indicate that neither geometric nor traffic control changes are warranted from a traffic operations level of service perspective.

The sight distance analysis indicated that more than adequate distance is available for visibility and stopping purposes. Sufficient distance is available for drivers to observe oncoming vehicles before turning onto NY 18.

Accident data for the three years considered does not indicate a pattern of accident occurrence that can be attributed to a geometric, traffic control or highway surface condition and therefore a specific highway safety problem. The pattern and distribution of accidents is similar to the distribution of traffic during a 24 hour period, and accident occurrences typical for the seasons of the year.

The additive peak hour truck traffic required to reduce the level of service varied by peak hour and highway segment and critical intersection approach, depending on the 1993 Background level of service. The number of trucks necessary to change the level of service is a function of how close the existing level of service is to the borderline of changing. For some highway segments and intersections, the level of service might change within one year due to the normal growth of automobile traffic, and therefore change the number of trucks required to change the level of service one additional level of service.

The number of trucks required to change levels of service varies from as little as 10 to as much as 180, depending on the particular set of circumstances. These numbers should be viewed as approximations and not as some precise and absolute value. They indicate an approximate value at which traffic operations are likely to change from one level of service characterization to another.

RECOMMENDATIONS

The analyses and findings presented herein have led to the conclusion that no changes at the three intersections and along the five highway segments considered in this study are necessary. Furthermore, the driveway entrances at the Lewiston-Porter School Complex have sight distances exceeding that required for vehicles operating at 55 mph, the current speed limit posted.

The historical accident occurrence pattern during the past three years does not indicate a cause of accidents that is not similar to the pattern of traffic volumes or what might be expected based on the seasons of the year, days of the week and hours of the day. No improvements to the traffic control or geometrics at the three intersections and five highway segments analyzed are warranted.

Acceptable level of service traffic operations prevail for both the intersections and highway segments. Additional trucks required to change the level of service one level for highway segments analyzed, still, does not create levels of service that are typically considered for remediation.

APPENDIX A

EXISTING LEVEL OF SERVICE

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) c_p	ACTUAL MOVEMENT CAPACITY c (pcph) c_M	SHARED CAPACITY c (pcph) c_{SH}	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
WB LEFT	37	405	384	> 384	> 347	> B
				> 583 > 460		>A
RIGHT	86	750	750	> 750	> 663	> A
MAJOR STREET						
SB LEFT	80	905	905	905	825	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... MD PEAK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	30	0	35
THRU	--	0	107	145
RIGHT	--	44	21	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... MD PEAK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	30	0	35
THRU	--	0	107	145
RIGHT	--	44	21	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	3	0	0
NORTHBOUND	4	15	0
SOUTHBOUND	4	13	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MD PEAK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
WB LEFT	34	491	477	> 477	> 444	> A
				> 635	> 552	>A
RIGHT	50	819	819	> 819	> 770	> A
MAJOR STREET						
SB LEFT	45	959	959	959	915	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MD PEAK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... PM PEAK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	27	0	45
THRU	--	0	134	161
RIGHT	--	72	27	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	3	0	0
NORTHBOUND	4	1	0
SOUTHBOUND	4	3	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PEAK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
WB LEFT	30	444	429	> 429	> 399	B
				> 641	> 529	>A
RIGHT	91	786	786	> 786	> 705	A
MAJOR STREET						
SB LEFT	53	927	927	927	875	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PEAK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

1985 HCM: UNSIGNALIZED INTERSECTIONS

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	71	0	8
THRU	--	0	45	198
RIGHT	--	9	52	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	11	9	0
NORTHBOUND	12	24	0
SOUTHBOUND	15	2	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
WB LEFT	90	508	505	> 505	> 415	> A
				> 530	> 428	>A
RIGHT	11	872	872	> 872	> 860	> A
MAJOR STREET						
SB LEFT	10	989	989	989	980	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... MID-DAY PK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	50	0	12
THRU	--	0	101	85
RIGHT	--	13	36	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	4	29	0
NORTHBOUND	4	7	0
SOUTHBOUND	4	14	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MID-DAY PK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
WB LEFT	73	562	557	> 557	> 484	> A
				> 596	> 504	>A
RIGHT	19	818	818	> 818	> 799	> A
MAJOR STREET						
SB LEFT	15	951	951	951	935	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MID-DAY PK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

1985 HCM: UNSIGNALIZED INTERSECTIONS

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/YY)..... 02/23/93

TIME PERIOD ANALYZED..... PM PK HR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	57	0	10
THRU	--	0	178	99
RIGHT	--	14	57	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	4	18	0
NORTHBOUND	3	2	0
SOUTHBOUND	4	3	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PK HR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
WB LEFT	76	476	472	> 472 > 507	> 396 > 412	B >A
RIGHT	19	725	725	> 725	> 706	A
MAJOR STREET						
SB LEFT	12	849	849	849	837	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PK HR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .85

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... CWM DRIVE

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	26	16	--
THRU	21	35	43	--
RIGHT	62	9	6	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	44	0
WESTBOUND	4	10	0
NORTHBOUND	5	40	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.30	6.30	0.00	6.30
MAJOR LEFTS	WB	5.90	5.90	0.00	5.90
MINOR LEFTS	NB	8.20	8.20	0.00	8.20

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	27	610	597	597	570	A
RIGHT	10	902	902	902	892	A
MAJOR STREET						
WB LEFT	34	917	917	917	883	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

1985 HCM: UNSIGNALIZED INTERSECTIONS

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .85

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... CWM DRIVE

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... MD PEAK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	13	38	--
THRU	18	20	43	--
RIGHT	23	9	9	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	35	0
WESTBOUND	10	20	0
NORTHBOUND	10	55	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.30	6.30	0.00	6.30
MAJOR LEFTS	WB	5.90	5.90	0.00	5.90
MINOR LEFTS	NB	8.20	8.20	0.00	8.20

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MD PEAK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	72	663	655	655	584	A
RIGHT	17	927	927	927	910	A
MAJOR STREET						
WB LEFT	19	959	959	959	940	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MD PEAK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

1985 HCM: UNSIGNALIZED INTERSECTIONS

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .85

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... CWM DRIVE

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... PM PEAK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	2	29	--
THRU	29	35	43	--
RIGHT	10	9	27	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	9	0
WESTBOUND	5	0	0
NORTHBOUND	3	10	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.30	6.30	0.00	6.30
MAJOR LEFTS	WB	5.90	5.90	0.00	5.90
MINOR LEFTS	NB	8.20	8.20	0.00	8.20

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PEAK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	38	654	653	653	615	A
RIGHT	35	929	929	929	893	A
MAJOR STREET						
WB LEFT	2	961	961	961	959	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PEAK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - SOUTH OF BALMER ROAD
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	8
PERCENTAGE OF BUSES	7
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.8
DIRECTIONAL DISTRIBUTION (UP/DOWN)	55 / 45
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	1	.88
B	2.2	2	2.5	1	1	.86
C	2.2	2	2.5	1	1	.86
D	2	1.6	1.6	1	1	.89
E	2	1.6	1.6	1	1	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 379
ACTUAL FLOW RATE: 474

LOS	SERVICE FLOW RATE	V/C
A	370	.15
B	648	.27
C	1033	.43
D	1597	.64
E	2496	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - SOUTH OF BALMER ROAD
ANALYST..... A & C
TIME OF ANALYSIS..... MID-DAY PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	10
PERCENTAGE OF BUSES	1
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.83
DIRECTIONAL DISTRIBUTION (UP/DOWN)	55 / 45
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	1	.9
B	2.2	2	2.5	1	1	.88
C	2.2	2	2.5	1	1	.88
D	2	1.6	1.6	1	1	.9
E	2	1.6	1.6	1	1	.9

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 341
ACTUAL FLOW RATE: 411

LOS	SERVICE FLOW RATE	V/C
A	379	.15
B	669	.27
C	1065	.43
D	1620	.64
E	2532	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - SOUTH OF BALMER ROAD
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	2
PERCENTAGE OF BUSES	1
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.88
DIRECTIONAL DISTRIBUTION (UP/DOWN)	59 / 41
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	2	1.8	2.2	1	1	.97
B	2.2	2	2.5	1	1	.97
C	2.2	2	2.5	1	1	.97
D	2	1.6	1.6	1	1	.97
E	2	1.6	1.6	1	1	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 402
ACTUAL FLOW RATE: 457

LOS	SERVICE FLOW RATE	V/C
A	409	.15
B	731	.27
C	1164	.43
D	1747	.64
E	2729	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... BALMER ROAD - EAST OF NY 18
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	26
PERCENTAGE OF BUSES	5
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.68
DIRECTIONAL DISTRIBUTION (UP/DOWN)	66 / 34
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.91	.77
B	2.2	2	2.5	1	.91	.73
C	2.2	2	2.5	1	.91	.73
D	2	1.6	1.6	1	.91	.78
E	2	1.6	1.6	1	.91	.78

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 217
ACTUAL FLOW RATE: 319

LOS	SERVICE FLOW RATE	V/C
A	294	.15
B	505	.27
C	804	.43
D	1264	.64
E	1975	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... BALMER ROAD - EAST OF NY 18
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	31
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.71
DIRECTIONAL DISTRIBUTION (UP/DOWN)	51 / 49
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.99	.76
B	2.2	2	2.5	1	.99	.73
C	2.2	2	2.5	1	.99	.73
D	2	1.6	1.6	1	.99	.76
E	2	1.6	1.6	1	.99	.76

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 197
ACTUAL FLOW RATE: 277

LOS	SERVICE FLOW RATE	V/C
A	319	.15
B	548	.27
C	872	.43
D	1360	.64
E	2125	1

LOS FOR GIVEN CONDITIONS: A

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... BALMER ROAD - EAST OF NY 18
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	14
PERCENTAGE OF BUSES	2
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.8
DIRECTIONAL DISTRIBUTION (UP/DOWN)	62 / 38
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.99	.87
B	2.2	2	2.5	1	.99	.84
C	2.2	2	2.5	1	.99	.84
D	2	1.6	1.6	1	.99	.87
E	2	1.6	1.6	1	.99	.87

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 168
ACTUAL FLOW RATE: 210

LOS	SERVICE FLOW RATE	V/C
A	360	.15
B	630	.27
C	1003	.43
D	1540	.64
E	2406	1

LOS FOR GIVEN CONDITIONS: A

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	6
PERCENTAGE OF BUSES	4
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.91
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.92
B	2.2	2	2.5	1	.96	.9
C	2.2	2	2.5	1	.96	.9
D	2	1.6	1.6	1	.96	.92
E	2	1.6	1.6	1	.96	.92

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 542
ACTUAL FLOW RATE: 596

LOS	SERVICE FLOW RATE	V/C
A	368	.15
B	651	.27
C	1037	.43
D	1584	.64
E	2475	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... MID-DAY
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	14
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.89
DIRECTIONAL DISTRIBUTION (UP/DOWN)	56 / 44
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.88
B	2.2	2	2.5	1	.96	.86
C	2.2	2	2.5	1	.96	.86
D	2	1.6	1.6	1	.96	.88
E	2	1.6	1.6	1	.96	.88

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 384
ACTUAL FLOW RATE: 431

LOS	SERVICE FLOW RATE	V/C
A	355	.15
B	624	.27
C	994	.43
D	1515	.64
E	2368	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... PM
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	2
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.9
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.98
B	2.2	2	2.5	1	.96	.98
C	2.2	2	2.5	1	.96	.98
D	2	1.6	1.6	1	.96	.98
E	2	1.6	1.6	1	.96	.98

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 526
ACTUAL FLOW RATE: 584

LOS	SERVICE FLOW RATE	V/C
A	394	.15
B	707	.27
C	1126	.43
D	1683	.64
E	2630	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... PM
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	2
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.9
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.98
B	2.2	2	2.5	1	.96	.98
C	2.2	2	2.5	1	.96	.98
D	2	1.6	1.6	1	.96	.98
E	2	1.6	1.6	1	.96	.98

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 526
ACTUAL FLOW RATE: 584

LOS	SERVICE FLOW RATE	V/C
A	394	.15
B	707	.27
C	1126	.43
D	1683	.64
E	2630	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... NY18 - SOUTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	8
PERCENTAGE OF BUSES	2
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.82
DIRECTIONAL DISTRIBUTION (UP/DOWN)	58 / 42
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.95	.91
B	2.2	2	2.5	1	.95	.9
C	2.2	2	2.5	1	.95	.9
D	2	1.6	1.6	1	.95	.92
E	2	1.6	1.6	1	.95	.92

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 581
ACTUAL FLOW RATE: 709

LOS	SERVICE FLOW RATE	V/C
A	365	.15
B	645	.27
C	1027	.43
D	1562	.64
E	2441	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY18 - SOUTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	16
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.86
DIRECTIONAL DISTRIBUTION (UP/DOWN)	56 / 44
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.86
B	2.2	2	2.5	1	.96	.84
C	2.2	2	2.5	1	.96	.84
D	2	1.6	1.6	1	.96	.86
E	2	1.6	1.6	1	.96	.86

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 435
ACTUAL FLOW RATE: 506

LOS	SERVICE FLOW RATE	V/C
A	349	.15
B	611	.27
C	974	.43
D	1489	.64
E	2327	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... NY18 - SOUTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	4
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.9
DIRECTIONAL DISTRIBUTION (UP/DOWN)	64 / 36
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.92	.96
B	2.2	2	2.5	1	.92	.95
C	2.2	2	2.5	1	.92	.95
D	2	1.6	1.6	1	.92	.96
E	2	1.6	1.6	1	.92	.96

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 552
ACTUAL FLOW RATE: 613

LOS	SERVICE FLOW RATE	V/C
A	372	.15
B	664	.27
C	1057	.43
D	1585	.64
E	2477	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... 1993 TRAFFIC NB - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	3	(HEAVY - 300 #/HP)
PERCENTAGE OF BUSES	1	
PERCENTAGE OF RECREATIONAL VEHICLES	0	
DESIGN SPEED (MPH)	60	
PEAK HOUR FACTOR	.85	
DRIVER POPULATION FACTOR	1	(WEEKDAY/COMMUTER)
LANE WIDTH (FT)	12	
OBSTRUCTIONS	ONE SIDE	
DISTANCE (FT) FROM ROADWAY EDGE	2	
TYPE OF MULTILANE HIGHWAY	SUBURBAN, UNDIVIDED	

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.93	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES	2
INPUT VOLUME	525
V/C RATIO	.22
LEVEL OF SERVICE	A
MAX. SERVICE FLOW RATE (pcphpl)	439
SPEED (mph)	52
DENSITY (pcpmpl)	9

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... 1993 TRAFFIC SB - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 3 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 1
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .85
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.93	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 1427
V/C RATIO..... .6
LEVEL OF SERVICE.....C
MAX. SERVICE FLOW RATE (pcphpl).. 1193
SPEED (mph)..... 45
DENSITY (pcpmpl)..... 26

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... 1993 TRAFFIC NB - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 5 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .91
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.91	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 799
V/C RATIO..... .32
LEVEL OF SERVICE.....A
MAX. SERVICE FLOW RATE (pcphpl).. 635
SPEED (mph)..... 50
DENSITY (pcpmpl)..... 12

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 05/12/92

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... EXISTING TURNS

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	31	0	63
THRU	--	0	170	157
RIGHT	--	74	7	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	5	1	0
NORTHBOUND	2	16	0
SOUTHBOUND	4	7	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; AM PK HOUR
OTHER INFORMATION.... EXISTING TURNS

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
WB LEFT	36	416	395	> 395	> 360	B
				> 596	> 475	>A
RIGHT	85	757	757	> 757	> 672	A
MAJOR STREET						
SB LEFT	76	912	912	912	836	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; AM PK HOUR
OTHER INFORMATION.... EXISTING TURNS

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 05/12/92

TIME PERIOD ANALYZED..... MD PEAK HOUR

OTHER INFORMATION.... EXISTING TURNS

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	29	0	34
THRU	--	0	103	139
RIGHT	--	43	20	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	3	0	0
NORTHBOUND	4	15	0
SOUTHBOUND	4	13	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS					
	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS					
	SB	5.40	5.40	0.00	5.40
MINOR LEFTS					
	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; MD PEAK HOUR
OTHER INFORMATION.... EXISTING TURNS

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c (pcph) c_p	ACTUAL MOVEMENT CAPACITY c (pcph) c_M	SHARED CAPACITY c (pcph) c_{SH}	RESERVE CAPACITY $c = c_R - v_{SH}$	LOS
MINOR STREET						
WB LEFT	33	501	487	> 487 > 645	> 454 > 563	A >A
RIGHT	48	824	824	> 824	> 776	A
MAJOR STREET						
SB LEFT	43	964	964	964	921	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; MD PEAK HOUR
OTHER INFORMATION.... EXISTING TURNS

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 05/12/92

TIME PERIOD ANALYZED..... PM PEAK HOUR

OTHER INFORMATION.... EXISTING TURNS

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	26	0	43
THRU	--	0	129	155
RIGHT	--	71	26	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	3	0	0
NORTHBOUND	4	1	0
SOUTHBOUND	4	3	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; PM PEAK HOUR
OTHER INFORMATION.... EXISTING TURNS

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c (pcph) c_p	ACTUAL MOVEMENT CAPACITY c (pcph) c_M	SHARED CAPACITY c (pcph) c_{SH}	RESERVE CAPACITY $c = c - v$ c_R c_{SH}	LOS
MINOR STREET						
WB LEFT	29	456	441	> 441	> 412	> A
				> 653	> 543	>A
RIGHT	80	792	792	> 792	> 712	> A
MAJOR STREET						
SB LEFT	50	933	933	933	883	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; PM PEAK HOUR
OTHER INFORMATION.... EXISTING TURNS

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****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 05/12/92

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... EXISTING TURNS

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	70	0	8
THRU	--	0	43	190
RIGHT	--	9	50	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	11	9	0
NORTHBOUND	12	24	0
SOUTHBOUND	15	2	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; AM PK HOUR
OTHER INFORMATION.... EXISTING TURNS

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c (pcph) c_p	ACTUAL MOVEMENT CAPACITY c (pcph) c_M	SHARED CAPACITY c (pcph) c_{SH}	RESERVE CAPACITY $c = c - v$ c_R	c_{SH}	LOS
MINOR STREET							
WB LEFT	89	518	515	> 515	> 425		> A
				> 540	> 439		>A
RIGHT	11	875	875	> 875	> 863		> A
MAJOR STREET							
SB LEFT	10	993	993	993	983		A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; AM PK HOUR
OTHER INFORMATION.... EXISTING TURNS

1985 HCM: UNSIGNALIZED INTERSECTIONS Page-1

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IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 05/12/92

TIME PERIOD ANALYZED..... MID-DAY PK HOUR

OTHER INFORMATION.... EXISTING TURNS

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	49	0	11
THRU	--	0	97	82
RIGHT	--	13	35	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	4	29	0
NORTHBOUND	4	7	0
SOUTHBOUND	4	14	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; MID-DAY PK HOUR
OTHER INFORMATION.... EXISTING TURNS

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
WB LEFT	71	570	564	> 564 > 604	> 493 > 514	A >A
RIGHT	19	823	823	> 823	> 804	A
MAJOR STREET						
SB LEFT	14	955	955	955	941	A

IDENTIFYING INFORMATION

"AME OF THE EAST/WEST STREET..... BALMER
ME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; MID-DAY PK HOUR
OTHER INFORMATION.... EXISTING TURNS

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 05/12/92

TIME PERIOD ANALYZED..... PM PK HR

OTHER INFORMATION.... EXISTING TURNS

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	56	0	10
THRU	--	0	171	95
RIGHT	--	14	55	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	4	18	0
NORTHBOUND	3	2	0
SOUTHBOUND	4	3	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; PM PK HR
OTHER INFORMATION.... EXISTING TURNS

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c (pcph) c_p	ACTUAL MOVEMENT CAPACITY c (pcph) c_M	SHARED CAPACITY c (pcph) c_{SH}	RESERVE CAPACITY $c = c_R - v_{SH}$	LOS
MINOR STREET						
WB LEFT	75	486	482	> 482	> 407	A
				> 518	> 424	>A
RIGHT	19	733	733	> 733	> 714	A
MAJOR STREET						
SB LEFT	12	858	858	858	847	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; PM PK HR
OTHER INFORMATION.... EXISTING TURNS

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .85

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... CUM DRIVE

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 05/12/92

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... EXISTING TURNS

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	25	16	--
THRU	21	34	43	--
RIGHT	61	9	6	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	44	0
WESTBOUND	4	40	0
NORTHBOUND	5	40	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.30	6.30	0.00	6.30
MAJOR LEFTS	WB	5.90	5.90	0.00	5.90
MINOR LEFTS	NB	8.20	8.20	0.00	8.20

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; AM PK HOUR
OTHER INFORMATION.... EXISTING TURNS

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
NB LEFT	27	613	600	600	573	A
RIGHT	10	903	903	903	893	A
MAJOR STREET						
WB LEFT	33	918	918	918	885	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; AM PK HOUR
OTHER INFORMATION.... EXISTING TURNS

1985 HCM: UNSIGNALIZED INTERSECTIONS Page-1

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IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .85

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... CWM DRIVE

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 05/12/92

TIME PERIOD ANALYZED..... HD PEAK HOUR

OTHER INFORMATION.... EXISTING TURNS

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	13	37	--
THRU	18	20	43	--
RIGHT	23	9	9	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

JUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	35	0
WESTBOUND	10	20	0
NORTHBOUND	10	55	0
SOUTHBOUND	---	---	---

RITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.30	6.30	0.00	6.30
MAJOR LEFTS	WB	5.90	5.90	0.00	5.90
MINOR LEFTS	NB	8.20	8.20	0.00	8.20

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; MD PEAK HOUR
OTHER INFORMATION.... EXISTING TURNS

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c (pcph) c_p	ACTUAL MOVEMENT CAPACITY c (pcph) c_M	SHARED CAPACITY c (pcph) c_{SH}	RESERVE CAPACITY $c = c - v$ c_R c_{SH}	LOS
MINOR STREET						
NB LEFT	70	663	655	655	586	A
RIGHT	17	927	927	927	910	A
MAJOR STREET						
WB LEFT	19	959	959	959	940	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; MD PEAK HOUR
OTHER INFORMATION.... EXISTING TURNS

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .85

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... CWM DRIVE

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 05/12/92

TIME PERIOD ANALYZED..... PM PEAK HOUR

OTHER INFORMATION.... EXISTING TURNS

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	2	28	--
THRU	28	34	43	--
RIGHT	10	9	26	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	9	0
WESTBOUND	5	0	0
NORTHBOUND	3	10	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.30	6.30	0.00	6.30
MAJOR LEFTS	WB	5.90	5.90	0.00	5.90
MINOR LEFTS	NB	8.20	8.20	0.00	8.20

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 05/12/92 ; PM PEAK HOUR
OTHER INFORMATION.... EXISTING TURNS

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c (pcph) c_p	ACTUAL MOVEMENT CAPACITY c (pcph) c_M	SHARED CAPACITY c (pcph) c_{SH}	RESERVE CAPACITY $c = c_R - v_{SH}$	LOS
MINOR STREET						
NB LEFT	37	656	655	655	618	A
RIGHT	34	929	929	929	895	A
MAJOR STREET						
WB LEFT	2	962	962	962	960	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
ATE AND TIME OF THE ANALYSIS..... 05/12/92 ; PM PEAK HOUR
OTHER INFORMATION.... EXISTING TURNS

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... BALMER ROAD - EAST OF NY 18
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 05/12/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	26
PERCENTAGE OF BUSES	5
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.68
DIRECTIONAL DISTRIBUTION (UP/DOWN)	66 / 34
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.91	.77
B	2.2	2	2.5	1	.91	.73
C	2.2	2	2.5	1	.91	.73
D	2	1.6	1.6	1	.91	.78
E	2	1.6	1.6	1	.91	.78

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 213
ACTUAL FLOW RATE: 313

LOS	SERVICE FLOW RATE	V/C
A	294	.15
B	505	.27
C	804	.43
D	1264	.64
E	1975	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... BALMER ROAD - EAST OF NY 18
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 05/12/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	31
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.71
DIRECTIONAL DISTRIBUTION (UP/DOWN)	51 / 49
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	2	1.8	2.2	1	.99	.76
B	2.2	2	2.5	1	.99	.73
C	2.2	2	2.5	1	.99	.73
D	2	1.6	1.6	1	.99	.76
E	2	1.6	1.6	1	.99	.76

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 193
ACTUAL FLOW RATE: 272

LOS	SERVICE FLOW RATE	V/C
A	319	.15
B	548	.27
C	872	.43
D	1360	.64
E	2125	1

LOS FOR GIVEN CONDITIONS: A

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... BALMER ROAD - EAST OF NY 18
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 05/12/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 14
PERCENTAGE OF BUSES..... 2
PERCENTAGE OF RECREATIONAL VEHICLES..... 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .8
DIRECTIONAL DISTRIBUTION (UP/DOWN)..... 62 / 38
LANE WIDTH (FT)..... 12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)... 8
PERCENT NO PASSING ZONES..... 0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	2	1.8	2.2	1	.93	.87
B	2.2	2	2.5	1	.93	.84
C	2.2	2	2.5	1	.93	.84
D	2	1.6	1.6	1	.93	.87
E	2	1.6	1.6	1	.93	.87

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 165
ACTUAL FLOW RATE: 206

LOS	SERVICE FLOW RATE	V/C
A	338	.15
B	592	.27
C	943	.43
D	1447	.64
E	2260	1

LOS FOR GIVEN CONDITIONS: A

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - SOUTH OF SALMER ROAD
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 05/12/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	8
PERCENTAGE OF BUSES	7
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	50
PEAK HOUR FACTOR	.8
DIRECTIONAL DISTRIBUTION (UP/DOWN)	55 / 45
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	2	1.8	2.2	1	.97	.88
B	2.2	2	2.5	1	.97	.86
C	2.2	2	2.5	1	.97	.86
D	2	1.6	1.6	1	.97	.89
E	2	1.6	1.6	1	.97	.89

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 364
ACTUAL FLOW RATE: 455

LOS	SERVICE FLOW RATE	V/C
A	359	.15
B	629	.27
C	1002	.43
D	1549	.64
E	2421	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - SOUTH OF BALMER ROAD
ANALYST..... A & C
TIME OF ANALYSIS..... MID-DAY PK HR
DATE OF ANALYSIS..... 05/12/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	10
PERCENTAGE OF BUSES	1
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.83
DIRECTIONAL DISTRIBUTION (UP/DOWN)	55 / 45
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	2	1.8	2.2	1	.97	.9
B	2.2	2	2.5	1	.97	.88
C	2.2	2	2.5	1	.97	.88
D	2	1.6	1.6	1	.97	.9
E	2	1.6	1.6	1	.97	.9

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 328
ACTUAL FLOW RATE: 395

LOS	SERVICE FLOW RATE	V/C
A	368	.15
B	649	.27
C	1034	.43
D	1572	.64
E	2456	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - SOUTH OF BALMER ROAD
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 05/12/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	2
PERCENTAGE OF BUSES	1
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.88
DIRECTIONAL DISTRIBUTION (UP/DOWN)	59 / 41
LANE WIDTH (FT)	12
USABLE SHOULDER WIOTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	2	1.8	2.2	1	.95	.97
B	2.2	2	2.5	1	.95	.97
C	2.2	2	2.5	1	.95	.97
D	2	1.6	1.6	1	.95	.97
E	2	1.6	1.6	1	.95	.97

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 387
ACTUAL FLOW RATE: 440

LOS	SERVICE FLOW RATE	V/C
A	386	.15
B	692	.27
C	1102	.43
D	1652	.64
E	2582	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 05/12/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	6
PERCENTAGE OF BUSES	4
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.91
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	2	1.8	2.2	1	.96	.92
B	2.2	2	2.5	1	.96	.9
C	2.2	2	2.5	1	.96	.9
D	2	1.6	1.6	1	.96	.92
E	2	1.6	1.6	1	.96	.92

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 521
ACTUAL FLOW RATE: 573

LOS	SERVICE FLOW RATE	V/C
A	368	.15
B	651	.27
C	1037	.43
D	1584	.64
E	2475	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... MID-DAY
DATE OF ANALYSIS..... 05/12/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	14
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.89
DIRECTIONAL DISTRIBUTION (UP/DOWN)	56 / 44
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.88
B	2.2	2	2.5	1	.96	.86
C	2.2	2	2.5	1	.96	.86
D	2	1.6	1.6	1	.96	.88
E	2	1.6	1.6	1	.96	.88

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 369
ACTUAL FLOW RATE: 415

LOS	SERVICE FLOW RATE	V/C
A	355	.15
B	624	.27
C	994	.43
D	1515	.64
E	2368	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... PM
DATE OF ANALYSIS..... 05/12/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	2
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.9
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	2	1.8	2.2	1	.96	.98
B	2.2	2	2.5	1	.96	.98
C	2.2	2	2.5	1	.96	.98
D	2	1.6	1.6	1	.96	.98
E	2	1.6	1.6	1	.96	.98

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 506
ACTUAL FLOW RATE: 562

LOS	SERVICE FLOW RATE	V/C
A	394	.15
B	707	.27
C	1126	.43
D	1683	.64
E	2630	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY18 - SOUTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 05/14/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	8
PERCENTAGE OF BUSES	2
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.82
DIRECTIONAL DISTRIBUTION (UP/DOWN)	58 / 42
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.95	.91
B	2.2	2	2.5	1	.95	.9
C	2.2	2	2.5	1	.95	.9
D	2	1.6	1.6	1	.95	.92
E	2	1.6	1.6	1	.95	.92

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 559
ACTUAL FLOW RATE: 682

LOS	SERVICE FLOW RATE	V/C
A	365	.15
B	645	.27
C	1027	.43
D	1562	.64
E	2441	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY18 - SOUTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 05/14/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	16
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	50
PEAK HOUR FACTOR	.86
DIRECTIONAL DISTRIBUTION (UP/DOWN)	56 / 44
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.86
B	2.2	2	2.5	1	.96	.84
C	2.2	2	2.5	1	.96	.84
D	2	1.6	1.6	1	.96	.86
E	2	1.6	1.6	1	.96	.86

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 418
ACTUAL FLOW RATE: 486

LOS	SERVICE FLOW RATE	V/C
A	349	.15
B	611	.27
C	974	.43
D	1489	.64
E	2327	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY18 - SOUTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 05/14/92
OTHER INFORMATION.... EXISTING TRAFFIC

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	4
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.9
DIRECTIONAL DISTRIBUTION (UP/DOWN)	64 / 36
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f W	f d	f HV
A	2	1.8	2.2	1	.92	.96
B	2.2	2	2.5	1	.92	.95
C	2.2	2	2.5	1	.92	.95
D	2	1.6	1.6	1	.92	.96
E	2	1.6	1.6	1	.92	.96

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 531
ACTUAL FLOW RATE: 590

LOS	SERVICE FLOW RATE	V/C
A	372	.15
B	664	.27
C	1057	.43
D	1585	.64
E	2477	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... EXISTING TRAFFIC - NB

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS.....	3 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES.....	1
PERCENTAGE OF RECREATIONAL VEHICLES..	0
DESIGN SPEED (MPH).....	60
PEAK HOUR FACTOR.....	.85
DRIVER POPULATION FACTOR.....	1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT).....	12
OBSTRUCTIONS.....	ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE.....	2
TYPE OF MULTILANE HIGHWAY.....	SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.93	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES.....	2
INPUT VOLUME.....	510
V/C RATIO.....	.21
LEVEL OF SERVICE.....	A
MAX. SERVICE FLOW RATE (pcphpl)..	426
SPEED (mph).....	52
DENSITY (pcpmpl).....	8

1985 HCM:MULTILANE HIGHWAYS

****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... EXISTING TRAFFIC - SB

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 3 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 1
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .85
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.93	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS

****

NO. OF LANES..... 2
INPUT VOLUME..... 1385
V/C RATIO..... .58
LEVEL OF SERVICE.....C
MAX. SERVICE FLOW RATE (pcphpl).. 1158
SPEED (mph)..... 45
DENSITY (pcpmpl)..... 25

1985 HCM:MULTILANE HIGHWAYS

****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... EXISTING TRAFFIC - NB

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 5 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .91
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.91	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS

****

NO. OF LANES..... 2
INPUT VOLUME..... 776
V/C RATIO..... .31
LEVEL OF SERVICE.....A
MAX. SERVICE FLOW RATE (pcphpl).. 617
SPEED (mph)..... 50
DENSITY (pcpmpl)..... 12

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... EXISTING TRAFFIC - SB

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 5 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .91
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.91	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 766
V/C RATIO..... .3
LEVEL OF SERVICE.....A
MAX. SERVICE FLOW RATE (pcphpl).. 609
SPEED (mph)..... 51
DENSITY (pcpmpl)..... 12

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... EXISTING TRAFFIC - NB

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	1	(HEAVY - 300 #/HP)
PERCENTAGE OF BUSES	0	
PERCENTAGE OF RECREATIONAL VEHICLES	0	
DESIGN SPEED (MPH)	60	
PEAK HOUR FACTOR	.9	
DRIVER POPULATION FACTOR	1	(WEEKDAY/COMMUTER)
LANE WIDTH (FT)	12	
OBSTRUCTIONS	ONE SIDE	
DISTANCE (FT) FROM ROADWAY EDGE	2	
TYPE OF MULTILANE HIGHWAY	SUBURBAN, UNDIVIDED	

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.98	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES	2
INPUT VOLUME	1324
V/C RATIO	.49
LEVEL OF SERVICE	B
MAX. SERVICE FLOW RATE (pcphpl)	987
SPEED (mph)	47
DENSITY (pcpmpl)	20

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... EXISTING TRAFFIC - SB

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 1 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .93
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.98	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 752
V/C RATIO..... .27
LEVEL OF SERVICE.....A
MAX. SERVICE FLOW RATE (pcphpl).. 543
SPEED (mph)..... 51
DENSITY (pcpmpl)..... 10

APPENDIX B

TARGET YEAR 1993 TRAFFIC
WITHOUT CONSTRUCTION TRUCKS
LEVEL OF SERVICE

1985 HCM: UNSIGNALIZED INTERSECTIONS

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	32	0	66
THRU	--	0	177	163
RIGHT	--	75	7	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	5	1	0
NORTHBOUND	2	16	0
SOUTHBOUND	4	7	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... 1993 TURNS - BACKGROUND

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	32	0	66
THRU	--	0	177	163
RIGHT	--	75	7	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	5	1	0
NORTHBOUND	2	16	0
SOUTHBOUND	4	7	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS - BACKGROUND

1985 HCM:MULTILANE HIGHWAYS

****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... 1993 TRAFFIC SB - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 5 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .91
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.91	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS

****

NO. OF LANES..... 2
INPUT VOLUME..... 789
V/C RATIO..... .31
LEVEL OF SERVICE.....A
MAX. SERVICE FLOW RATE (pcphpl).. 627
SPEED (mph)..... 50
DENSITY (pcpmpl)..... 12

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02-24-93
OTHER INFORMATION.... 1993 TRAFFIC NB - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 1 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .9
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.98	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 1364
V/C RATIO..... .51
LEVEL OF SERVICE.....C
MAX. SERVICE FLOW RATE (pcphpl).. 1017
SPEED (mph)..... 47
DENSITY (pcpmpl)..... 21

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02-25-93
OTHER INFORMATION.... 1993 TRAFFIC SB - BACKGROUND

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 1 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .93
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.98	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 775
V/C RATIO..... .28
LEVEL OF SERVICE.....A
MAX. SERVICE FLOW RATE (pcphpl).. 559
SPEED (mph)..... 51
DENSITY (pcpmpl)..... 11

APPENDIX C

TARGET YEAR 1993 TRAFFIC WITH CONSTRUCTION TRUCKS LEVEL OF SERVICE

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	32	0	66
THRU	--	0	210	196
RIGHT	--	75	7	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	5	1	0
NORTHBOUND	2	28	0
SOUTHBOUND	4	18	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v (pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)		SHARED CAPACITY c_{SH} (pcph)		RESERVE CAPACITY $c_R = c_{SH} - v$		LOS
MINOR STREET									
WB LEFT	37	360	338	>	338	>	301	>	B
				> 538		> 414		>A	
RIGHT	86	718	718	>	718	>	632	>	A
MAJOR STREET									
SB LEFT	88	868	868		868		780		A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... MD PEAK HOUR

OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	30	0	35
THRU	--	0	140	178
RIGHT	--	44	21	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	3	0	0
NORTHBOUND	4	32	0
SOUTHBOUND	4	26	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MD PEAK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
WB LEFT	34	437	423	> 423	> 389	B
				> 582	> 498	>A
RIGHT	50	783	783	> 783	> 733	A
MAJOR STREET						
SB LEFT	50	927	927	927	878	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MD PEAK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... SWANN

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... PM PEAK HOUR

OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	27	0	45
THRU	--	0	167	194
RIGHT	--	72	27	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	3	0	0
NORTHBOUND	4	18	0
SOUTHBOUND	4	16	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PEAK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) c_p	ACTUAL MOVEMENT CAPACITY c (pcph) c_M	SHARED CAPACITY c (pcph) c_{SH}	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
WB LEFT	30	398	383	> 383 > 352		> B
				> 594 > 482		>A
RIGHT	81	750	750	> 750 > 668		> A
MAJOR STREET						
SB LEFT	59	894	894	894	835	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... SWANN
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PEAK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	104	0	8
THRU	--	0	45	198
RIGHT	--	9	85	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	11	35	0
NORTHBOUND	12	43	0
SOUTHBOUND	15	2	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)		SHARED CAPACITY c_{SH} (pcph)		RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET								
WB LEFT	162	494	491	>	491	>	329	> B
				> 509		> 332		>B
RIGHT	14	853	853	>	853	>	839	> A
MAJOR STREET								
SB LEFT	10	957	957		957		948	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... MID-DAY PK HOUR

OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	83	0	12
THRU	--	0	101	85
RIGHT	--	13	69	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	-----	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	4	53	0
NORTHBOUND	4	25	0
SOUTHBOUND	4	14	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MID-DAY PK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

MOVEMENT	FLOW-RATE v(pcph)	POTEN-TIAL CAPACITY c (pcph) c_p	ACTUAL MOVEMENT CAPACITY c (pcph) c_M	SHARED CAPACITY c (pcph) c_{SH}	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
WB LEFT	143	547	542	> 542	> 399	> B
				> 567	> 401	>A
RIGHT	22	799	799	> 799	> 777	> A
MAJOR STREET						
SB LEFT	15	919	919	919	903	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MID-DAY PK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .9

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... NY 18

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... PM PK HR

OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: NORTH/SOUTH

CONTROL TYPE WESTBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	--	90	0	10
THRU	--	0	178	99
RIGHT	--	14	90	0

NUMBER OF LANES

	EB	WB	NB	SB
LANES	--	1	1	1

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	------	---	---	-
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	0.00	90	20	N

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	---	---	---
WESTBOUND	4	44	0
NORTHBOUND	3	14	0
SOUTHBOUND	4	3	0

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	WB	6.30	6.30	0.00	6.30
MAJOR LEFTS	SB	5.40	5.40	0.00	5.40
MINOR LEFTS	WB	7.70	7.70	0.00	7.70

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PK HR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
WB LEFT	146	462	458	> 458 > 481	> 312 > 313	B >B
RIGHT	23	709	709	> 709	> 687	A
MAJOR STREET						
SB LEFT	12	812	812	812	801	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... NY 18
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PK HR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

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IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .85

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... CWM DRIVE

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... AM PK HOUR

OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	26	49	--
THRU	21	35	43	--
RIGHT	95	9	6	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	53	0
WESTBOUND	4	10	0
NORTHBOUND	5	76	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.30	6.30	0.00	6.30
MAJOR LEFTS	WB	5.90	5.90	0.00	5.90
MINOR LEFTS	NB	8.20	8.20	0.00	8.20

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	103	593	580	580	477	A
RIGHT	13	882	882	882	870	A
MAJOR STREET						
WB LEFT	34	878	878	878	844	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; AM PK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .85

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... CWM DRIVE

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... MD PEAK HOUR

OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	13	71	--
THRU	18	20	43	--
RIGHT	56	9	9	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	64	0
WESTBOUND	10	20	0
NORTHBOUND	10	73	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.30	6.30	0.00	6.30
MAJOR LEFTS	WB	5.90	5.90	0.00	5.90
MINOR LEFTS	NB	8.20	8.20	0.00	8.20

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MD PEAK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	149	645	637	637	489	A
RIGHT	19	908	908	908	889	A
MAJOR STREET						
WB LEFT	19	926	926	926	907	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; MD PEAK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

****

IDENTIFYING INFORMATION

AVERAGE RUNNING SPEED, MAJOR STREET.. 50

PEAK HOUR FACTOR..... .85

AREA POPULATION..... 150000

NAME OF THE EAST/WEST STREET..... BALMER

NAME OF THE NORTH/SOUTH STREET..... CWM DRIVE

NAME OF THE ANALYST..... A & C

DATE OF THE ANALYSIS (mm/dd/yy)..... 02/23/93

TIME PERIOD ANALYZED..... PM PEAK HOUR

OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

INTERSECTION TYPE AND CONTROL

INTERSECTION TYPE: T-INTERSECTION

MAJOR STREET DIRECTION: EAST/WEST

CONTROL TYPE NORTHBOUND: STOP SIGN

TRAFFIC VOLUMES

	EB	WB	NB	SB
LEFT	0	2	62	--
THRU	29	35	43	--
RIGHT	43	9	27	--

NUMBER OF LANES

	EB	WB	NB	SB
LANES	2	1	2	--

ADJUSTMENT FACTORS

	PERCENT GRADE	RIGHT TURN ANGLE	CURB RADIUS (ft) FOR RIGHT TURNS	ACCELERATION LANE FOR RIGHT TURNS
EASTBOUND	0.00	90	20	N
WESTBOUND	0.00	90	20	N
NORTHBOUND	0.00	90	20	N
SOUTHBOUND	-----	---	---	-

VEHICLE COMPOSITION

	% SU TRUCKS AND RV'S	% COMBINATION VEHICLES	% MOTORCYCLES
EASTBOUND	4	50	0
WESTBOUND	5	0	0
NORTHBOUND	3	43	0
SOUTHBOUND	---	---	---

CRITICAL GAPS

		TABULAR VALUES (Table 10-2)	ADJUSTED VALUE	SIGHT DIST. ADJUSTMENT	FINAL CRITICAL GAP
MINOR RIGHTS	NB	6.30	6.30	0.00	6.30
MAJOR LEFTS	WB	5.90	5.90	0.00	5.90
MINOR LEFTS	NB	8.20	8.20	0.00	8.20

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PEAK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

MOVEMENT	FLOW-RATE v(pcph)	POTENTIAL CAPACITY c_p (pcph)	ACTUAL MOVEMENT CAPACITY c_M (pcph)	SHARED CAPACITY c_{SH} (pcph)	RESERVE CAPACITY $c_R = c_{SH} - v$	LOS
MINOR STREET						
NB LEFT	105	636	635	635	530	A
RIGHT	46	909	909	909	863	A
MAJOR STREET						
WB LEFT	2	928	928	928	926	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... BALMER
NAME OF THE NORTH/SOUTH STREET.... CWM DRIVE
DATE AND TIME OF THE ANALYSIS..... 02/23/93 ; PM PEAK HOUR
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - SOUTH OF BALMER ROAD
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	21
PERCENTAGE OF BUSES	7
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.8
DIRECTIONAL DISTRIBUTION (UP/DOWN)	53 / 47
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.98	.79
B	2.2	2	2.5	1	.98	.76
C	2.2	2	2.5	1	.98	.76
D	2	1.6	1.6	1	.98	.8
E	2	1.6	1.6	1	.98	.8

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 445
ACTUAL FLOW RATE: 556

LOS	SERVICE FLOW RATE	V/C
A	326	.15
B	562	.27
C	894	.43
D	1406	.64
E	2196	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - SOUTH OF BALMER ROAD
ANALYST..... A & C
TIME OF ANALYSIS..... MID-DAY PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	24
PERCENTAGE OF BUSES	1
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.83
DIRECTIONAL DISTRIBUTION (UP/DOWN)	53 / 47
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.98	.8
B	2.2	2	2.5	1	.98	.77
C	2.2	2	2.5	1	.98	.77
D	2	1.6	1.6	1	.98	.8
E	2	1.6	1.6	1	.98	.8

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 407
ACTUAL FLOW RATE: 490

LOS	SERVICE FLOW RATE	V/C
A	330	.15
B	572	.27
C	911	.43
D	1412	.64
E	2207	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - SOUTH OF BALMER ROAD
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TURNS W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	16
PERCENTAGE OF BUSES	1
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.88
DIRECTIONAL DISTRIBUTION (UP/DOWN)	55 / 45
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.97	.86
B	2.2	2	2.5	1	.97	.83
C	2.2	2	2.5	1	.97	.83
D	2	1.6	1.6	1	.97	.86
E	2	1.6	1.6	1	.97	.86

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 468
ACTUAL FLOW RATE: 532

LOS	SERVICE FLOW RATE	V/C
A	349	.15
B	610	.27
C	972	.43
D	1491	.64
E	2329	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... BALMER ROAD - EAST OF NY 18
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TRAFFIC W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	43
PERCENTAGE OF BUSES	5
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.68
DIRECTIONAL DISTRIBUTION (UP/DOWN)	60 / 40
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.94	.68
B	2.2	2	2,5	1	.94	.64
C	2.2	2	2.5	1	.94	.64
D	2	1.6	1.6	1	.94	.68
E	2	1.6	1.6	1	.94	.68

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 283
ACTUAL FLOW RATE: 416

LOS	SERVICE FLOW RATE	V/C
A	269	.15
B	454	.27
C	723	.43
D	1154	.64
E	1803	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... BALMER ROAD - EAST OF NY 18
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TRAFFIC W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	48
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.71
DIRECTIONAL DISTRIBUTION (UP/DOWN)	51 / 49
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.99	.68
B	2.2	2	2.5	1	.99	.63
C	2.2	2	2.5	1	.99	.63
D	2	1.6	1.6	1	.99	.68
E	2	1.6	1.6	1	.99	.68

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 263
ACTUAL FLOW RATE: 370

LOS	SERVICE FLOW RATE	V/C
A	282	.15
B	477	.27
C	759	.43
D	1204	.64
E	1881	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... BALMER ROAD - EAST OF NY 18
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02/23/93
OTHER INFORMATION.... 1993 TRAFFIC W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	38
PERCENTAGE OF BUSES	2
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.8
DIRECTIONAL DISTRIBUTION (UP/DOWN)	58 / 42
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.95	.72
B	2.2	2	2.5	1	.95	.68
C	2.2	2	2.5	1	.95	.68
D	2	1.6	1.6	1	.95	.72
E	2	1.6	1.6	1	.95	.72

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 234
ACTUAL FLOW RATE: 293

LOS	SERVICE FLOW RATE	V/C
A	286	.15
B	488	.27
C	777	.43
D	1226	.64
E	1915	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	16
PERCENTAGE OF BUSES	4
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.91
DIRECTIONAL DISTRIBUTION (UP/DOWN)	56 / 44
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.84
B	2.2	2	2.5	1	.96	.81
C	2.2	2	2.5	1	.96	.81
D	2	1.6	1.6	1	.96	.84
E	2	1.6	1.6	1	.96	.84

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 608
ACTUAL FLOW RATE: 668

LOS	SERVICE FLOW RATE	V/C
A	340	.15
B	592	.27
C	942	.43
D	1459	.64
E	2280	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... MID-DAY
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	27
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.89
DIRECTIONAL DISTRIBUTION (UP/DOWN)	55 / 45
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.97	.79
B	2.2	2	2.5	1	.97	.76
C	2.2	2	2.5	1	.97	.76
D	2	1.6	1.6	1	.97	.79
E	2	1.6	1.6	1	.97	.79

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 450
ACTUAL FLOW RATE: 506

LOS	SERVICE FLOW RATE	V/C
A	321	.15
B	554	.27
C	882	.43
D	1369	.64
E	2139	1

LOS FOR GIVEN CONDITIONS: B

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... NY 18 - NORTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	13
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.9
DIRECTIONAL DISTRIBUTION (UP/DOWN)	56 / 44
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	8
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.88
B	2.2	2	2.5	1	.96	.87
C	2.2	2	2.5	1	.96	.87
D	2	1.6	1.6	1	.96	.88
E	2	1.6	1.6	1	.96	.88

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 592
ACTUAL FLOW RATE: 658

LOS	SERVICE FLOW RATE	V/C
A	358	.15
B	630	.27
C	1004	.43
D	1529	.64
E	2389	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... NY18 - SOUTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	17
PERCENTAGE OF BUSES	2
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.82
DIRECTIONAL DISTRIBUTION (UP/DOWN)	57 / 43
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.96	.84
B	2.2	2	2.5	1	.96	.82
C	2.2	2	2.5	1	.96	.82
D	2	1.6	1.6	1	.96	.85
E	2	1.6	1.6	1	.96	.85

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 647
ACTUAL FLOW RATE: 789

LOS	SERVICE FLOW RATE	V/C
A	339	.15
B	592	.27
C	942	.43
D	1452	.64
E	2269	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS
****

FACILITY LOCATION.... NY18 - SOUTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	27
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.86
DIRECTIONAL DISTRIBUTION (UP/DOWN)	55 / 45
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.97	.79
B	2.2	2	2.5	1	.97	.76
C	2.2	2	2.5	1	.97	.76
D	2	1.6	1.6	1	.97	.79
E	2	1.6	1.6	1	.97	.79

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 501
ACTUAL FLOW RATE: 583

LOS	SERVICE FLOW RATE	V/C
A	321	.15
B	554	.27
C	882	.43
D	1369	.64
E	2139	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:TWO-LANE HIGHWAYS

****

FACILITY LOCATION.... NY18 - SOUTH OF NY 104
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02/24/93
OTHER INFORMATION.... 1993 TRAFFIC W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS	14
PERCENTAGE OF BUSES	0
PERCENTAGE OF RECREATIONAL VEHICLES	0
DESIGN SPEED (MPH)	60
PEAK HOUR FACTOR	.9
DIRECTIONAL DISTRIBUTION (UP/DOWN)	63 / 37
LANE WIDTH (FT)	12
USABLE SHOULDER WIDTH (AVG. WIDTH IN FT.)	6
PERCENT NO PASSING ZONES	0

B) CORRECTION FACTORS

LEVEL TERRAIN

LOS	E T	E B	E R	f w	f d	f HV
A	2	1.8	2.2	1	.93	.88
B	2.2	2	2.5	1	.93	.86
C	2.2	2	2.5	1	.93	.86
D	2	1.6	1.6	1	.93	.88
E	2	1.6	1.6	1	.93	.88

C) LEVEL OF SERVICE RESULTS

INPUT VOLUME(vph): 618
ACTUAL FLOW RATE: 687

LOS	SERVICE FLOW RATE	V/C
A	341	.15
B	599	.27
C	954	.43
D	1454	.64
E	2272	1

LOS FOR GIVEN CONDITIONS: C

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... AM PK HR
DATE OF ANALYSIS..... 02-25-93
OTHER INFORMATION.... 1993 TRAFFIC NB W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 9 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 1
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .85
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.83	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 558
V/C RATIO..... .26
LEVEL OF SERVICE.....A
MAX. SERVICE FLOW RATE (pcphpl).. 518
SPEED (mph)..... 51
DENSITY (pcpmpl)..... 10

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... MD PK HR
DATE OF ANALYSIS..... 02-25-93
OTHER INFORMATION.... 1993 TRAFFIC SB W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 9 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .91
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.85	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 822
V/C RATIO..... .35
LEVEL OF SERVICE.....B
MAX. SERVICE FLOW RATE (pcphpl).. 701
SPEED (mph)..... 50
DENSITY (pcpmpl)..... 14

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02-25-93
OTHER INFORMATION.... 1993 TRAFFIC NB W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 3 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .9
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.94	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 1397
V/C RATIO..... .54
LEVEL OF SERVICE.....C
MAX. SERVICE FLOW RATE (pcphpl).. 1082
SPEED (mph)..... 46
DENSITY (pcpmpl)..... 23

1985 HCM:MULTILANE HIGHWAYS
****

FACILITY SECTION..... ROUTE 104 - SOUTH OF RTE 18
ANALYST..... A & C
TIME OF ANALYSIS..... PM PK HR
DATE OF ANALYSIS..... 02-25-93
OTHER INFORMATION.... 1993 TRAFFIC SB W/ CONSTRUCTION

A) ADJUSTMENT FACTORS

PERCENTAGE OF TRUCKS..... 5 (HEAVY - 300 #/HP)
PERCENTAGE OF BUSES..... 0
PERCENTAGE OF RECREATIONAL VEHICLES.. 0
DESIGN SPEED (MPH)..... 60
PEAK HOUR FACTOR..... .93
DRIVER POPULATION FACTOR..... 1 (WEEKDAY/COMMUTER)
LANE WIDTH (FT)..... 12
OBSTRUCTIONS..... ONE SIDE
DISTANCE (FT) FROM ROADWAY EDGE..... 2
TYPE OF MULTILANE HIGHWAY..... SUBURBAN, UNDIVIDED

B) CORRECTION FACTORS

TERRAIN TYPE	E T	E B	E R	f HV	f w	f p	f E
ROLLING	3.0	3.0	3.0	0.91	0.95	1.00	0.80

C) OPERATIONAL ANALYSIS RESULTS
****

NO. OF LANES..... 2
INPUT VOLUME..... 808
V/C RATIO..... .31
LEVEL OF SERVICE.....A
MAX. SERVICE FLOW RATE (pcphpl).. 629
SPEED (mph)..... 50
DENSITY (pcpmpl)..... 12

APPENDIX D

STATEMENT OF QUALIFICATION

Bettigole Andrews & Clark
Consulting Engineers

737 Main Street
Suite 1030
Buffalo, NY 14203
716-854-1181
Fax 716-854-1800

Offices:
New Jersey
New York
New Hampshire
Connecticut
Massachusetts
Pennsylvania
Florida

BETTIGOLE ANDREWS & CLARK, INC

STATEMENT OF QUALIFICATIONS

BETTIGOLE ANDREWS & CLARK, INC. is a 200 person professional services organization with offices in Buffalo, New York; New York, New York; Hackensack, New Jersey; Concord, New Hampshire; Boston, Massachusetts; Philadelphia, Pennsylvania and Coral Gables, Florida. We have been offering consulting services to both public and private agencies in the fields of transportation and the environment since 1938. We provide services that include feasibility studies, transportation planning, traffic engineering, bridge inspection, civil and structural design for highways and bridges, land surveying, railroad facility design, flood control and protection, environmental impact statements, land planning, site development, moveable bridge design, long span and complex bridge structure design and construction management and inspection.

BETTIGOLE ANDREWS & CLARK, INC. serves a variety of clients throughout the eastern United States. Our projects range in magnitude and complexity from a traffic impact study for a small development to a $160 million transportation planning and design project such as the Long Island Expressway in Long Island, New York. Other major projects we have designed are the modifications to the Tappen Zee Bridge which carries the New York State Thruway over the Hudson River north of New York City and the in-depth inspections and ratings of the Verrazano Narrows, Triborough, Whitestone and Throg's Neck bridges which are all major structures in the New York City area.

BETTIGOLE ANDREWS & CLARK, INC. also has extensive experience in implementing community interaction programs as part of major development projects. Our community liaison staff plays an important role in establishing credibility, cooperation and support for the projects in which we are involved. We have given hundreds of presentations to community groups, professional societies and government agencies. In each case, we made use of understandable language presentation graphics and project newsletters.

All of these have proven to be valuable tools in successfully promoting transportation and site development projects. These programs play an important role in expediting projects through environmental and design process by limiting potential opposition and making use of local input in the design. This effort gives the project a local identity and allows the time to tap the knowledge and experience of the project-affected local communities.

APPENDIX E

RESUMES

BETTIGOLE ANDREWS & CLARK, INC.

NAME: BRIAN A. MOORE, P.E.

TITLE: Traffic Engineer/Transportation Planner

EDUCATION: MSCE, Transportation Planning, University of Michigan, 1965
BSCE, Civil Engineering, University of Michigan, 1964
Training Workshops:
CEAL - CLM, 1993
Transportation Demand Management - ITE, 1993
Traffic Signal Workshop - Northwestern University, Traffic Institute, 1991
TMODEL 2, 1990
TRANSYT 7F, 1989

REGISTRATIONS: Professional Engineer in Ohio and Michigan; New York Pending

AFFILIATIONS: Institute of Transportation Engineers

EXPERIENCE:

Mr. Moore has 18 years of experience in the fields of transportation planning and traffic engineering. He has conducted numerous site development impact analyses; signal designs; intersection analyses; and traffic circulation, transportation planning, corridor feasibility, accident and parking studies. He also has developed traffic, social, economic, and financial resources forecasts. Mr. Moore has responsibility for project management, field inventory, quality control and accuracy checks analyses, report preparation and meeting presentations. A representative sample of projects accomplishment includes:

TRAFFIC/TRANSPORTATION PLANNING STUDIES

Southtowns Connector Feasibility Study

Assistant Project Director for a 15 mile corridor transportation planning study between the City of Buffalo CBD and the Southtowns. Project included transportation planning, origin-destination surveys, traffic count program, capacity analysis, traffic projections, construction cost estimates, feasibility report preparation, community participation and supervision of two sub-consultants providing economic and environmental portions of the study.

Corridor Environmental Study: Routes 101/51 - New Hampshire

Responsible for developing base year AM and PM peak hour highway traffic for a seven mile corridor environmental study. The base year traffic data was developed for a 50 mile square study area using TMODEL2. Future AM and PM peak hour traffic volumes for 21 alternative interchange configurations were developed for two target years.

Northeast Amherst, Traffic Study, Amherst, New York

Project Engineer for traffic study and transportation plan update, Town of Amherst, New York which included determination of roadway traffic deficiencies and roadway geometric and traffic control changes to resolve deficiencies.

Rehabilitation of Delaware Avenue, Buffalo, New York

Responsible Engineer for the rehabilitation of Delaware Avenue, Buffalo, New York. Responsibilities included the design of acutated traffic and pedestrian signals for 20 intersections, specification of traffic signs and locations, design of traffic maintenance and control plan for work zones and cost estimates of construction.

Orchard Park Commerce Center, Orchard Park, New York

Project Engineer responsible for scoping, organizing and completing traffic impact study for a proposed high technology Research and Development Center encompassing 144 acres. Proposed development consisted of mixed land use that included office space, light industry, banks, restaurants, hotel and storage/warehouse to be constructed in two phases. The traffic analyses included level of service, signal warrants, traffic diversion and weave operations. Responsible for supervision of field inventory of streets, traffic controls and traffic counts; performing traffic analyses; developing site trip and area traffic forecasts; determining area highway and intersection deficiencies; developing remediation measures and costs for different access scenarios for each phase of construction; and preparing traffic component for EIS report.

Lackawanna Tire Recycling Facility

Project Engineer for the traffic impact study for the planned tire recycling facility to be located in Lackawanna, New York. Study consisted of determining the traffic impacts of the new facility on the surrounding roadway system. Included were machine and manual traffic counting, trip generation, capacity analysis and traffic projections.

'ryant Woods Office Development, Amherst, New York

Update of a traffic impact study conducted in 1986. Purpose of the study was to determine impact of revised proposed land use development on existing traffic patterns. The study involved collecting highway traffic counts and peak hour turning movements and performing field inventory of existing highway characteristics. Traffic analyses and projections were performed and recommendations were made to accommodate forecasted future traffic volumes.

CWM Chemical Services

Project Engineer for the traffic impact study for the planned expansion of CWM's facility in Model City, New York. Project included machine and manual counting program, trip generation, capacity analysis, determination of traffic projections and deficient geometrics.

Another study evaluated the existing process of how waste haulers proceed through the site. The process was analyzed and recommendations were made to make the THROUGH-PUT process of waste haulers more efficient and less time consuming.

Allen Street Corridor Traffic Study: Buffalo, New York

Project Engineer responsible for investigating cause of existing traffic delays and congestion along a 4 block long 2 lane arterial with curb parking in an old neighborhood business district with shops, restaurants and businesses and recommending alternative mitigation measures to alleviate delays and congestion. Organized and supervised field inventory of parking conditions, street and intersection geometry, existing traffic controls and turning movements during peak periods. Analyzed alternatives to mitigate delays and congestion; prepared recommendations; identified impacts on parking spaces, queue lengths at intersection approaches, and average delay of vehicles; developed cost estimates for implementation of recommendations; and prepared a final report for presentation to the city. Recommendations included revisions to signal phasing, signal splits, implementation of turn lanes, lane striping and removal of limited on street parking spaces.

Signal Timing Optimization: Tupper Street and Delaware Avenue, Buffalo, New York

Responsible for developing traffic signal plans for a series of signals for different time periods of the day to optimize traffic flow. Studies involved different theories of optimization, including maximizing band width and minimizing fuel consumption. Developed salient parameters of traffic signal timing for implementation, including cycle length, phases, splits, offsets, maximum gap, minimum gap, maximum green, minimum green, initial green and green extension, utilizing PC computer software TRANSYT 7F and PASSER II.

Roadway Rehabilitation - M.P. 180 to M.P. 200 New York State Thruway Authority

Responsible Engineer for the rehabilitation of the New York State Thruway, 20 mile section, east of Utica, New York. Responsibilities included determination of roadway accident relationships, corresponding appropriate geometric and traffic control solutions, and determination of location and form of traffic barriers; criteria utilized to define need for glare screens; location of glare screens; specific form of glare screen, and tandem truck lot review analysis and design layout.

Roadway Rehabilitation - M.P. 466 to M.P. 486 New York State Thruway Authority

Responsible Engineer for the rehabilitation of the New York State Thruway, 20 mile section, west of Buffalo, New York. Responsibilities included determination of roadway accident relationships and corresponding appropriate geometric and traffic control solutions, and analyzing existing roadway geometrics and developing recommended improvements to conform to current freeway standards.

CWM – Model City, New York

Traffic Impact Study

LOCATION:

Balmer Road
Towns of Lewiston and Porter
Niagara County, New York

PREPARED BY:

Wendel Companies
140 John James Audubon Parkway
Suite 200
Amherst, New York 14228

December 2011

Table of Contents

Executive Summary

CWM Chemical Services, LLC has made application to the New York State Department of Environmental Conservation (NYSDEC) for construction of a new landfill (RMU-2) that will replace the existing landfill (RMU-1) upon its closure (proposed action). Accordingly, this action is subject to environmental review under the State Environmental Quality Review Act (SEQR). This traffic impact study (TIS) has been prepared as supporting documentation for the SEQR assessment.

This TIS was conducted to assess the potential traffic impacts of operating a new landfill with the assumption that the maximum permitted annual waste intake, as currently established, will not increase. Consequently, traffic operations relative to vehicle types and volume will remain constant once the new landfill becomes operational.

The objectives of the TIS are:

1. Observe existing traffic operations in the vicinity of the landfill;
2. Evaluate whether the operation of a new landfill will have any measureable change in intersection Level of Service (LOS) at nearby intersections compared to current conditions; and,
3. Identify mitigation measures (if necessary) that can be implemented to avoid or minimize potential impacts to the transportation system to the extent practicable.

Synchro Version 7 traffic modeling software was used to conduct two traffic operational analyses:

1. Existing traffic operations (with separate truck count); and,
2. Proposed action traffic operations, which includes operation of the new landfill with existing non-truck traffic counts plus the maximum truck traffic volumes to/from the site (as allowed under the current Site Operations Plan).

The project site is located on the south side of Balmer Road, west of Porter Center Road, in the Town of Porter, Niagara County, New York (See Appendix A, Project Location Map). Automobile and truck access to the project site is via an access drive to/from Balmer Road.

In order to properly identify and evaluate the potential impacts to the transportation system resulting from the operation of the new landfill, manual turning movement counts used in the development of the TIS were taken during the morning (7:00am-8:00am), mid-day (11:00am-12:00pm) and evening (4:00pm-5:00pm) peak hours on Thursday, October 20, 2011. The following intersections were counted and then modeled to evaluate traffic operations:

1. Balmer Road and the Site Access Drive (unsignalized).
2. State Route 18 (Creek Road) and Balmer Road (unsignalized).
3. State Route 18 (Creek Road) and Pletcher Road (signalized).

A classification count was taken to observe the number and movement of trucks in the area of the landfill. The classification counts indicate that roadways in the vicinity of the site experience truck traffic volumes that are significantly lower than the maximum hourly truck traffic that is permitted by the Site Operations Plan.

Under the proposed action, which assumes the maximum truck trips permitted by the Site Operations Plan, there are no significant changes in traffic operations during any of the three peak hours. Specifically, the following was determined from the TIS:

- Individual approaches at the unsignalized intersection of Balmer Road and the Site Access Drive will continue to operate at a LOS B or better during all three peak hours.
- Individual approaches at the unsignalized intersection of State Route 18 and Balmer Road will continue to operate at a LOS B or better during all three peak hours.
- The signalized intersection of State Route 18 and Pletcher Road will continue to operate at an overall LOS of B or better during all three peak hours.

After evaluating the traffic operational analysis, operating a new landfill with the assumption that operation of the new landfill will include the maximum potential truck traffic, as permitted by the Site Operations Plan, will not result in any significant impacts to the traffic operations of the nearby highway system. Further, no mitigation or other improvements are recommended to the transportation system as part of the operation of the new landfill.

I. Introduction

CWM Chemical Services, LLC has made application to the NYSDEC for construction of a new landfill (RMU-2) that will replace the existing landfill (RMU-1) upon its closure (proposed action). Accordingly, this action is subject to environmental review under the SEQR. This TIS has been prepared as supporting documentation for the SEQR assessment.

This TIS was conducted to assess the potential traffic impacts of operating a new landfill with the assumption that the maximum permitted annual waste intake and daily truck traffic volumes, as currently established, will not increase. Consequently, traffic operations relative to vehicle types and volume will remain constant once the new landfill becomes operational.

The objectives of the TIS are:

1. Observe existing traffic operations in the vicinity of the landfill;
2. Evaluate whether the operation of a new landfill will have any measureable change in intersection LOS at nearby intersections compared to current conditions; and,
3. Identify mitigation measures (if necessary) that can be implemented to avoid or minimize potential impacts to the transportation system to the extent practicable.

This TIS utilizes traffic impact study processes and methodologies that are generally accepted by the New York State Department of Transportation (NYSDOT). Synchro Version 7 traffic modeling software was used to conduct two traffic operational analyses:

1. Existing traffic operations (with separate truck count); and,
2. Proposed action traffic operations, which includes operation of the new landfill with existing non-truck traffic counts plus the maximum truck traffic volumes to/from the site (as allowed under the current Site Operations Plan).

Synchro is based on methodologies presented in the 2000 Highway Capacity Manual that describe the operation of both signalized and unsignalized intersections. Although the 2000 Highway Capacity Manual does take into account the effects of adjacent traffic signals on overall operations, Synchro provides a more refined process to account for signal actuation, progression between signals, and impacts of traffic queues. This program is an industry accepted standard and was therefore used to accurately determine the LOS for traffic traveling through the study area intersections.

The LOS for both signalized and unsignalized intersections are defined in terms of control delay. Control delay is a measure of the total travel time lost and includes slowing delay, stopped delay, queue move up time, and start up lost time. LOS thresholds are defined as the average delay in seconds per vehicle over a fifteen-minute analysis period and range

from LOS A to LOS F for both signalized and unsignalized intersections. LOS A represents operating conditions of freely flowing traffic with little or no delay. LOS F represents operating conditions of highly congested traffic with forced (breakdown) flow and substantial delays. The following provides a summary of the Level of Service thresholds as defined in the 2000 Highway Capacity Manual.

Table 1: Level of Service Thresholds

Level of Service Thresholds	Signalized Intersections (seconds of delay)	Unsignalized Intersections (seconds of delay)
A – Little or no delay	Less than 10.0 seconds	Less than 10.0 seconds
B – Minor, short delays	10.1 to 20.0 seconds	10.1 to 15.0 seconds
C – Average delays	20.1 to 35.0 seconds	15.1 to 25.0 seconds
D – Long but acceptable delays	35.1 to 55.0 seconds	25.1 to 35.0 seconds
E – Long, near unacceptable delays	55.1 to 80.0 seconds	35.1 to 50.0 seconds
F – Unacceptable delays	More than 80.0 seconds	More than 50.0 seconds

An overall intersection LOS D or better is generally considered acceptable at a signalized intersection. An overall intersection LOS E or better is considered acceptable at an unsignalized intersection. The acceptable LOS thresholds are lower for an unsignalized intersection because drivers generally expect longer delays at unsignalized intersections versus signalized ones.

II. Project Location and Description

The project site is located on the south side of Balmer Road, west of Porter Center Road, in the Town of Porter, Niagara County, New York (See Appendix A, Project Location Map). Automobile and truck access to the project site is via an access drive to/from Balmer Road.

III. Existing Transportation System

Roadways

Balmer Road is an east-west oriented, two-lane road classified as a local street. The roadway consists of 24 feet of pavement width with 6 foot paved shoulders on both sides. The posted speed limit is 55 mph. Balmer Road experiences an annual average daily traffic (AADT) of 696 vehicles (Greater Buffalo-Niagara Regional Transportation Authority [GBNRTC]).

The site access drive is stop controlled approaching Balmer Road. There is a dedicated right turn lane from eastbound Balmer Road to the site access drive. Balmer Road

intersects with State Route 18 (Creek Road) forming a T intersection approximately 3 miles west of the site access. The approach from Balmer Road is stop controlled.

Pletcher Road is an east-west oriented, two-lane local road classified as a Collector west of State Route 18 and as a local road east of State Route 18. West of State Route 18, the roadway consists of 28 feet of pavement width and has a posted speed limit of 35 mph. The AADT on this section of Pletcher Road is 1,955 vehicles (GBNRTC). There is a full interchange with the Robert Moses Parkway west of State Route 18. East of State Route 18, the roadway consists of 28 feet of pavement width and the posted speed limit is 45 mph. The AADT on this section of Pletcher Road is 360 vehicles (GBNRTC). The intersection with State Route 18 is signalized.

State Route 18 is a north-south oriented, two-lane State road classified as a Minor Arterial north of Pletcher Road and a Principle Arterial south of Pletcher Road. The roadway consists of two 12 foot travel lanes with 8-10 foot paved shoulders on both sides. The posted speed limit is 45 mph. State Route 18 has an AADT of 4,082 vehicles (GBNRTC). Several driveways from the Lewiston-Porter School complex intersect with State Route 18 and consist of stop control at their approaches to State Route 18. The approach of Swann Road is stop controlled at State Route 18. The intersections of State Route 18/ State Route 104, State Route 18/ Pletcher Road, and State Route 18/ State Route 93 are controlled by traffic signals.

Public Transit

There is no public transit service along State Route 18 or Balmer Road, therefore, public transit service to the site is not directly available. The closest NFTA Metro Bus stop is in Niagara Falls.

Railroad

There are no active rail lines in the vicinity of the project site.

Pedestrian/ Bicycle

There are no sidewalks, multi-use paths, or bicycle facilities on or along any of the adjacent or nearby streets. Pedestrians and bicyclists share the shoulder of the roadway.

IV. CWM Site Operations Plan

The CWM Model City facility has developed a Site Operations Plan, which includes updates as outlined in Sitewide Part 373 Permit Module I. The Site Operations Plan sets forth standards for waste transport to the landfill. These standards were used as the basis for evaluating the maximum truck traffic to/from the site during the morning, mid-day, and

evening peak hours, as well as truck routing. The following standards were taken from the Site Operations Plan:

1. Non-CWM owned trucks carrying wastes or similar hazardous materials (e.g., acid used as a reagent in the AWT) will be scheduled for arrival or departure during the hours of 5:00am and 10:00pm, six days per week, except as noted below. CWM owned trucks will continue to be authorized to arrive and depart 24 hours per day. If non-CWM owned trucks carrying waste are within the boundaries of the Towns of Lewiston or Porter and are prevented from reaching the facility by 10:00pm as a result of mechanical malfunction or otherwise, the trucks shall be permitted to enter the facility upon arrival. CWM will report monthly to the Towns and County the number of and reason for late arrivals.
2. All trucks transporting, in bulk, blended fuels, PCB contaminated oils, or liquid or solid materials which present a risk of vapor release or fuming will be scheduled to arrive or depart the facility between 5:00am and 7:00am or between 4:00pm. The Permittee will obtain a copy of the Lewiston-Porter School "event" calendar and attempt to schedule shipments of the aforementioned materials so as to avoid events that are expected to be heavily attended.
3. No trucks carrying hazardous waste to the facility will be scheduled for arrival or departure between 7:30am and 9:00am or between 2:15pm and 3:45pm on days when the Lewiston-Porter School complex is in session. Trucks may be moved from CWM's transportation facility at 1135 Balmer Road to the TSDF site at 1550 Balmer Road during these hours.
4. No more than 35 waste trucks per hour will be scheduled for arrival or departure during the hours of 6:00am to 12:00pm. No more than 25 waste trucks per hour will be scheduled for arrival or departure during the hours of 5:00am to 6:00am and 12:00pm to 10:00pm, with the exceptions noted above.
5. Not more than 220 waste trucks will be scheduled for arrival during any 24-hour period, except for unusual circumstances, in which event no more than 250 waste trucks will be scheduled for arrival during any 24-hour period. Notice of any such unusual circumstances will be provided to the Towns, the County, and the Lewiston-Porter School District.
6. Except in the event of an emergency situation, no more than 45 CWM owned waste trucks will be scheduled to arrive or depart between the hours of 10:00pm and 5:00am. In the event of an emergency, any additional scheduling between 10:00pm and 5:00am will be subject to DEC approval with notice to the Towns and the County.
7. These resolutions do not apply to trucks delivering supplies and materials (e.g., cement, diesel fuel, propane, etc.).

8. Trucks carrying wastes to the facility and arriving via I-190 shall use the existing designated route. Trucks carrying wastes to the facility arriving from the eastern part of Niagara County shall use available State highways to Balmer Road. CWM will designate an alternative inbound route for trucks arriving via I-190 if adequate traffic safety devices (signals) are installed at the cloverleaf off ramp left turn onto Rt. 104 East.
9. Trucks carrying hazardous waste to the facility and arriving via I-190 shall use the existing designated route. Trucks carrying hazardous wastes to the facility arriving from the eastern part of Niagara County shall use the designated state highways to Balmer Road. The Permittee will designate an alternate inbound route for trucks arriving via I-190 if adequate traffic safety devices (signals) are installed at the cloverleaf off ramp left turn onto State Route 104 East.
10. No more than 8 empty waste trucks per hour leaving the facility eastbound shall be scheduled to use existing State highways to the East. Empty trucks leaving the facility southbound or westbound shall use the designated inbound route.
11. CWM, jointly with Lewiston, Porter, Niagara, the Board and/or ROLE, will pursue the possibility of using CWM's transportation facility in Tonawanda, NY as a staging area for inbound waste trucks using I-190, including non-CWM trucks, without the need to obtain any type of hazardous waste management facility permit or siting certificate.
12. The landfill will operate 24-hours per day, 6-days per week, except where special permission is obtained from DEC to operate on Sunday.

The designated route for trucks arriving or departing the facility, as outlined in the Site Operations Plan, is as follows:

A. State/ Federal highways only when entering Niagara County to SR 104 or NYS Thruway (I-190) north to SR 265 (north) to SR 104 then:
    1. State Route 104 to State Route 18
    2. North on State Route 18 approximately 5 miles to Balmer Road
    3. Right (east) on Balmer Road
    4. Proceed 3 miles to Guardhouse at truck/ plant entrance

B. The reverse shall be followed when leaving the facility. All waste haulers must use this route unless the CWM guard directs the driver north on State Route 18 to State Route 93 east during school "black out" hours for empty loads only. There is no stopping or standing along the designated route. Trucks are not allowed to be on any other roadway other than State/Federal highways when in Niagara County (with the exception of

Balmer Road). No convoys are permitted in the Towns of Lewiston or Porter (keep trucks ¼ mile apart) to the extent possible.

V. Existing Traffic Operations

Manual turning movement counts used in the development of the TIS were taken during the morning (7:00am-8:00am), mid-day (11:00am-12:00pm) and evening (4:00am-5:00pm) peak hours on Thursday, October 20, 2011. The following intersections were counted and then modeled to evaluate traffic operations:

1. Balmer Road and the Site Access Drive (unsignalized).
2. State Route 18 (Creek Road) and Balmer Road (unsignalized).
3. State Route 19 (Creek Road) and Pletcher Road (signalized).

A classification count was taken to observe the number and movement of trucks in the area of the landfill. The classification counts indicate that roadways in the vicinity of the site experience truck traffic volumes that are significantly lower than the maximum hourly truck traffic that is permitted by the Site Operations Plan. Figure 1 indicates the results of the existing peak hour traffic counts for all vehicles. Figure 2 provides the existing truck traffic volumes for each of the peak hour periods.

Figure 1: Existing Traffic Volumes (All Vehicles)

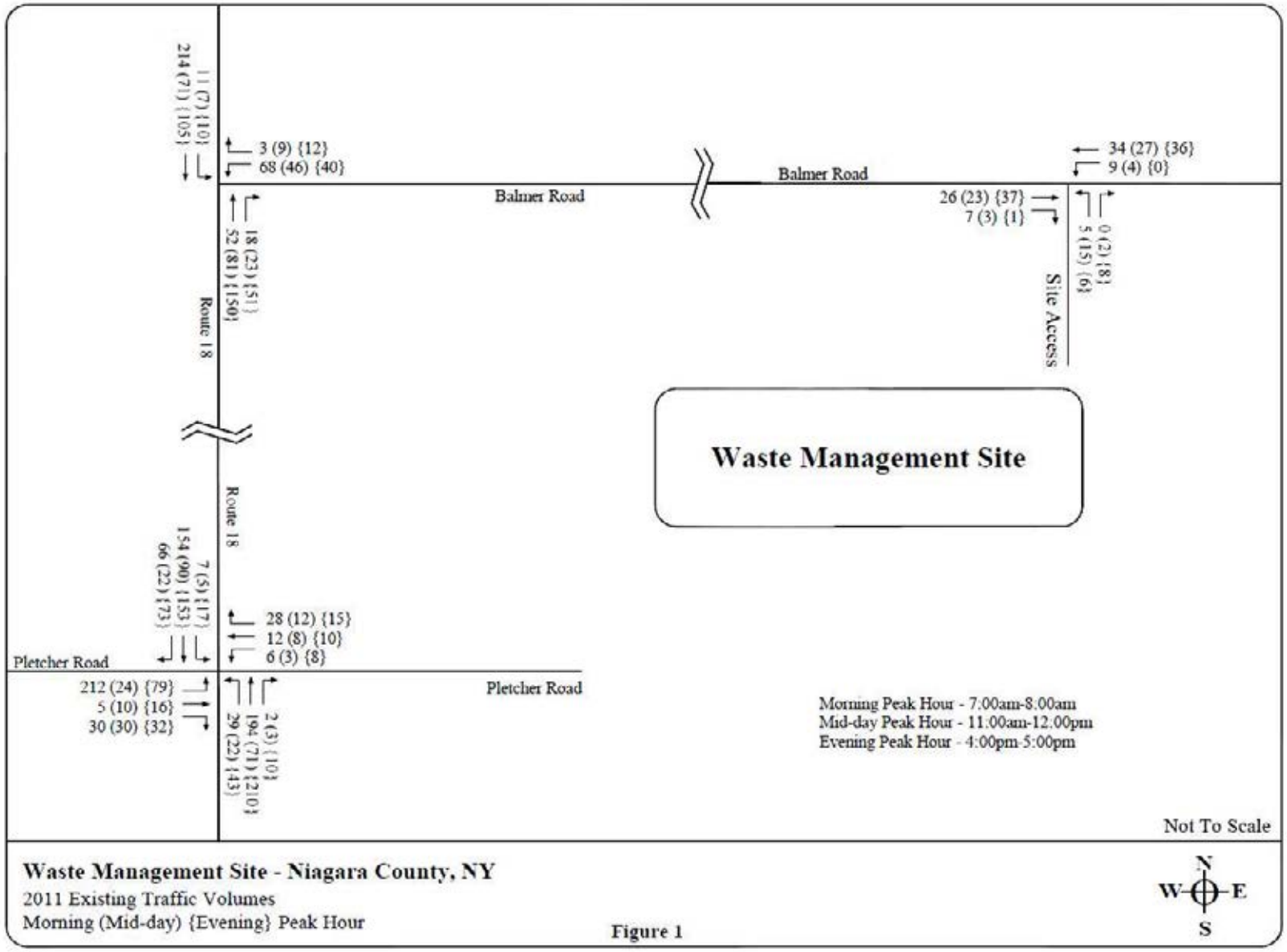
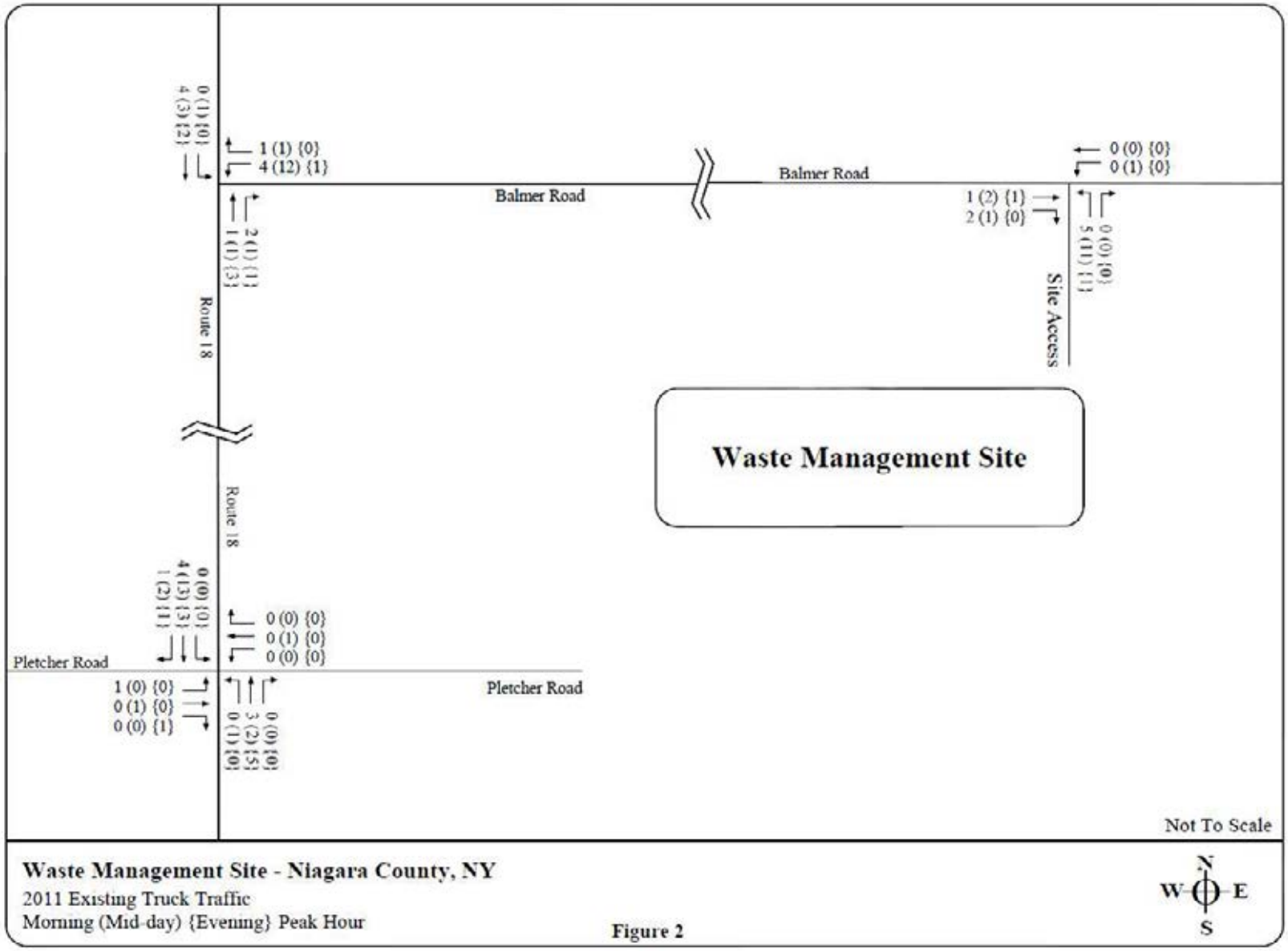


Figure 2: Existing Truck Traffic Volumes



VI. Proposed Action Traffic Operations

Since RMU-1 is already operating, it is anticipated that traffic operations relative to vehicle types and volume will remain constant once RMU-2 becomes operational and that additional traffic will not be generated. Therefore, the proposed action traffic operations consists of an analysis conducted on existing non-truck traffic counts plus the maximum truck traffic volume to/from the site (as allowed under the current Site Operations Plan).

To establish the non-truck traffic volumes on the roadway network, the number of trucks counted in the existing traffic operations were subtracted from the total traffic counts.

To establish the maximum number of trucks that would travel to/from the site, the Site Operations Plan was used as guidance, which establishes the following maximum truck trips per hour:

- Morning Peak Hour (7:00am- 8:00am) – 70 truck trips (35 entering and 35 exiting)
- Mid-day Peak Hour (11:00am- 12:00pm) – 70 truck trips (35 entering and 35 exiting)
- Evening Peak Hour (4:00pm- 5:00pm) – 50 truck trips (25 entering and 25 exiting)

The maximum number of trucks were then distributed to the roadway network based on the distribution of existing truck traffic, as determined by the manual turning movement counts performed for this TIS. Therefore, to evaluate the proposed action, 90% of the truck traffic was distributed south on State Route 18 and 10% was distributed to the north on State Route 18.

The maximum permitted truck traffic was then added to the existing non-truck traffic volumes on the roadway network to evaluate the proposed action. Figure 3 indicates the maximum truck traffic volumes for each of the three peak hours. Figure 4 provides the proposed action traffic volumes, with the total maximum traffic volumes for each of the three peak hours.

Figure 3: Maximum Truck Traffic Volumes

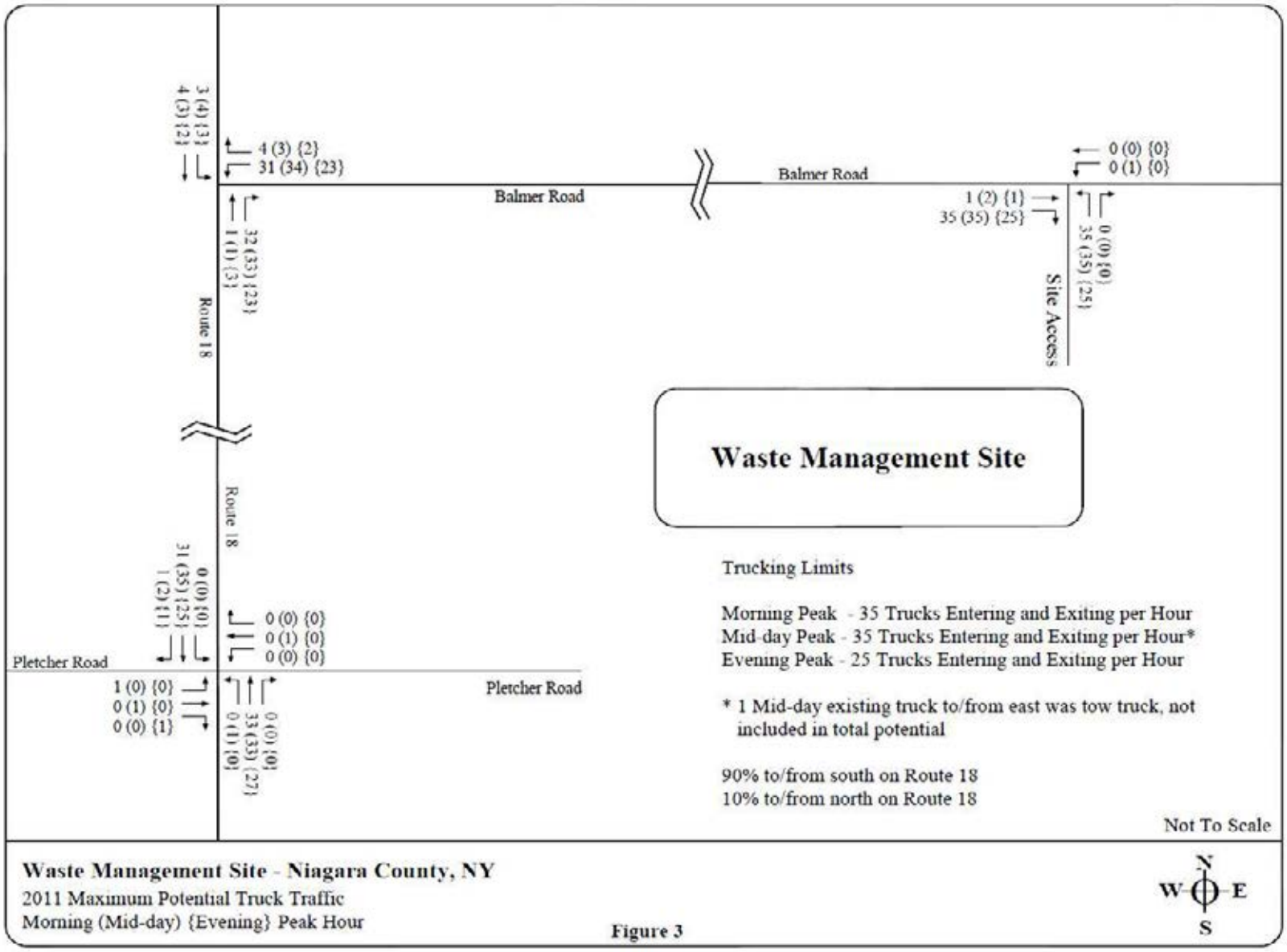
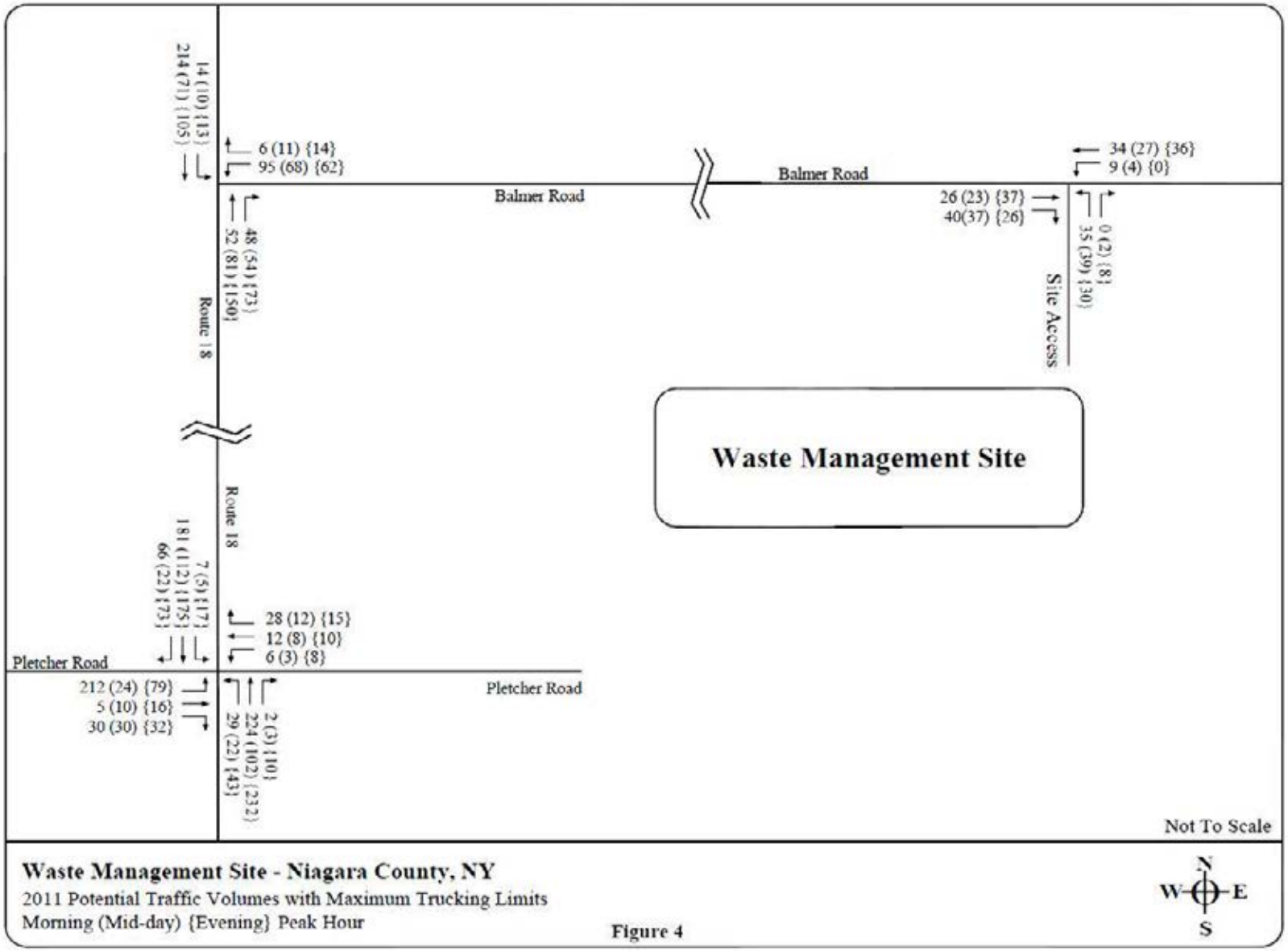


Figure 4: Proposed Action Traffic Volumes



VII. Potential Traffic Impacts

Under the proposed action, which assumes the maximum truck trips permitted by the Site Operations Plan, there are no significant changes in traffic operations during any of the three peak hours.

- Individual approaches at the unsignalized intersection of Balmer Road and the Site Access Drive will continue to operate at a LOS B or better during all three peak hours.
- Individual approaches at the unsignalized intersection of State Route 18 and Balmer Road will continue to operate at a LOS B or better during all three peak hours.
- The signalized intersection of State Route 18 and Pletcher Road will continue to operate at an overall LOS of B or better during all three peak hours.

Figure 5 outlines the existing and proposed action LOS for the three study intersections during all three peak hours.

VIII. Conclusion

After evaluating the traffic operational analysis, operating a new landfill with the assumption that operation of the new landfill will include the maximum potential truck traffic, as permitted by the Site Operations Plan, will not result in any significant impacts to the traffic operations of the nearby highway system. Further, no mitigation or other improvements are recommended to the transportation system as part of the operation of the new landfill.

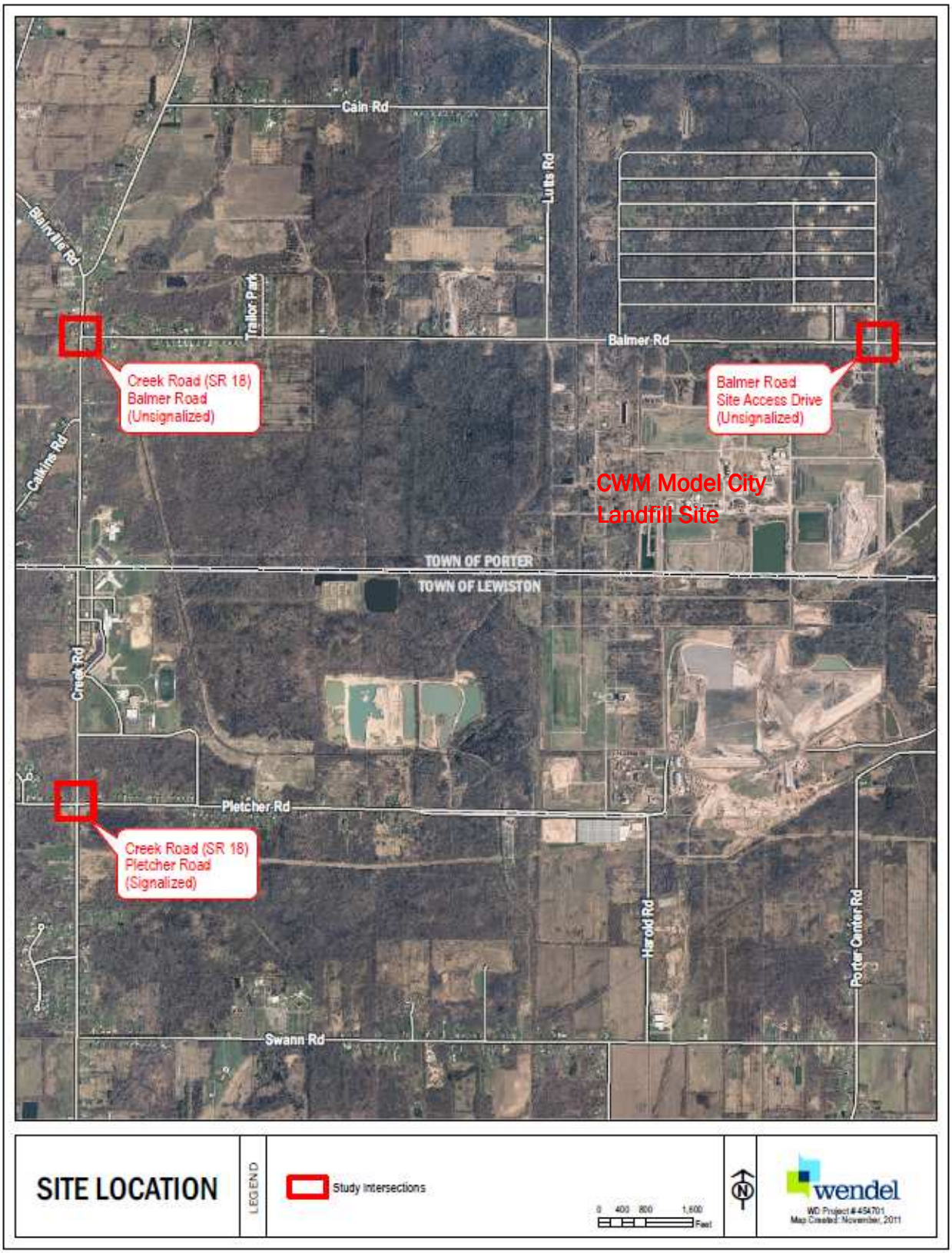
Figure 5: Intersection Level of Service Summary

Intersection Level of Service Summary
Waste Management Site – Niagara County, NY

Intersection	2011 Existing Conditions			2011 with Maximum Truck Potential		
	Morning Peak Hour	Mid-Day Peak Hour	Evening Peak Hour	Morning Peak Hour	Mid-Day Peak Hour	Evening Peak Hour
Route 18 (Creek Road) @ Plechter Road	**B(17)**	**A(7)**	**A(8)**	**B(19)**	**A(7)**	**A(9)**
EB Left/Through/Right	C(28)	B(11)	B(15)	C(30)	B(11)	B(15)
WB Left/Through/Right	A(7)	B(11)	B(11)	A(8)	B(11)	B(11)
NB Left/Through/Right	B(13)	A(5)	A(7)	B(15)	A(5)	A(8)
SB Left/Through/Right	B(12)	A(5)	A(6)	B(13)	A(5)	A(6)
Route 18 (Creek Road) @ Balmer Road						
WB Left/Right	b(12)	b(11)	b(11)	b(14)	b(11)	b(12)
NB Through/Right	a(0)	a(0)	a(0)	a(0)	a(0)	a(0)
SB Left/Through	a(1)	a(1)	a(1)	a(1)	a(1)	a(1)
Balmer Road @ Site Driveway						
EB Through/Right	a(0)	a(0)	a(0)	a(0)	a(0)	a(0)
EB Right	a(0)	a(0)	a(0)	a(0)	a(0)	a(0)
WB Left/Through	a(2)	a(1)	a(0)	a(2)	a(1)	a(0)
NB Left/Right	b(11)	a(10)	a(9)	b(11)	b(11)	a(10)

B(12) - Signalized Movement Level of Service (Average Delay per Vehicle in Seconds)
a(8) – Unsignalized Movement Level of Service (Average Delay per Vehicle in Seconds)

APPENDIX A – Project Location Map



APPENDIX B – Synchro Traffic Analysis Output

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

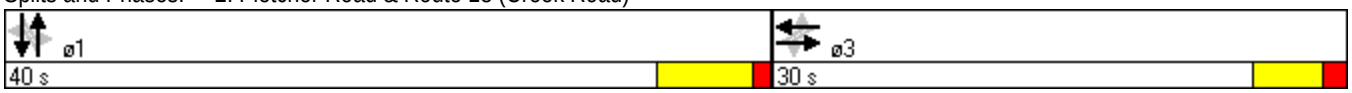
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	5	30	6	12	28	29	194	2	7	154	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1778	0	0	1732	0	0	1855	0	0	1776	0
Flt Permitted		0.710			0.944			0.925			0.987	
Satd. Flow (perm)	0	1316	0	0	1647	0	0	1726	0	0	1756	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			40			1			41	
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		1093			650			819			796	
Travel Time (s)		16.6			12.7			12.4			12.1	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	2%	0%	0%	3%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	353	0	0	66	0	0	321	0	0	324	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0		31.0	31.0	
Total Split (s)	30.0	30.0	0.0	30.0	30.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	42.9%	42.9%	0.0%	42.9%	42.9%	0.0%	57.1%	57.1%	0.0%	57.1%	57.1%	0.0%
Yellow Time (s)	3.6	3.6		3.6	3.6		5.0	5.0		5.0	5.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		20.0			20.0			26.1			26.1	
Actuated g/C Ratio		0.35			0.35			0.46			0.46	
v/c Ratio		0.75			0.11			0.41			0.39	
Control Delay		27.7			7.2			13.4			11.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		27.7			7.2			13.4			11.6	
LOS		C			A			B			B	
Approach Delay		27.7			7.2			13.4			11.6	
Approach LOS		C			A			B			B	
Queue Length 50th (ft)		97			6			71			61	
Queue Length 95th (ft)		137			19			100			88	
Internal Link Dist (ft)		1013			570			739			716	
Turn Bay Length (ft)												
Base Capacity (vph)		588			750			1037			1072	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.60			0.09			0.31			0.30	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

Intersection Summary
Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 57.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 17.2 Intersection LOS: B
Intersection Capacity Utilization 53.5% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Pletcher Road & Route 18 (Creek Road)



Lanes, Volumes, Timings
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	68	3	52	18	11	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1682	0	1758	0	0	1861
Flt Permitted	0.954					0.998
Satd. Flow (perm)	1682	0	1758	0	0	1861
Link Speed (mph)	45		45			45
Link Distance (ft)	1130		1008			957
Travel Time (s)	17.1		15.3			14.5
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	6%	33%	2%	11%	0%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	93	0	0	300
Sign Control	Stop		Free			Free

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 29.2% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	68	3	52	18	11	214
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	91	4	69	24	15	285
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	396	81			93	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	396	81			93	
tC, single (s)	6.5	6.5			4.1	
tC, 2 stage (s)						
tF (s)	3.6	3.6			2.2	
p0 queue free %	85	100			99	
cM capacity (veh/h)	595	899			1514	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	95	93	300
Volume Left	91	0	15
Volume Right	4	24	0
cSH	604	1700	1514
Volume to Capacity	0.16	0.05	0.01
Queue Length 95th (ft)	14	0	1
Control Delay (s)	12.1	0.0	0.4
Lane LOS	B		A
Approach Delay (s)	12.1	0.0	0.4
Approach LOS	B		

Intersection Summary			
Average Delay		2.6	
Intersection Capacity Utilization		29.2%	ICU Level of Service
Analysis Period (min)		15	

Lanes, Volumes, Timings
12: Balmer Road & Site Driveway

11/16/2011

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	26	7	9	34	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		615	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)		25	25		25	25
Satd. Flow (prot)	1827	1252	0	1879	902	0
Flt Permitted				0.989	0.950	
Satd. Flow (perm)	1827	1252	0	1879	902	0
Link Speed (mph)	55			55	30	
Link Distance (ft)	765			745	383	
Travel Time (s)	9.5			9.2	8.7	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	4%	29%	0%	0%	100%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	9	0	56	6	0
Sign Control	Free			Free	Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 19.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
12: Balmer Road & Site Driveway

11/16/2011

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	26	7	9	34	5	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	33	9	12	44	6	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			42		100	33
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			42		100	33
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			99		99	100
cM capacity (veh/h)			1580		703	1046

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	33	9	55	6
Volume Left	0	0	12	6
Volume Right	0	9	0	0
cSH	1700	1700	1580	703
Volume to Capacity	0.02	0.01	0.01	0.01
Queue Length 95th (ft)	0	0	1	1
Control Delay (s)	0.0	0.0	1.6	10.2
Lane LOS			A	B
Approach Delay (s)	0.0		1.6	10.2
Approach LOS				B

Intersection Summary				
Average Delay			1.5	
Intersection Capacity Utilization			19.0%	ICU Level of Service
Analysis Period (min)			15	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

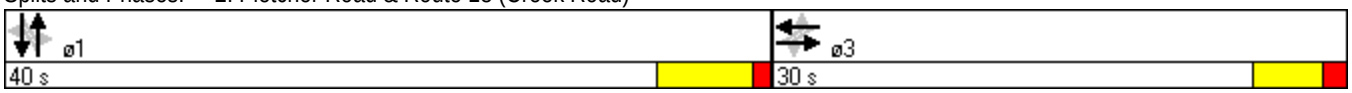
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	10	30	3	8	12	22	71	3	5	90	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1719	0	0	1685	0	0	1811	0	0	1644	0
Flt Permitted		0.866			0.938			0.917			0.988	
Satd. Flow (perm)	0	1516	0	0	1590	0	0	1679	0	0	1628	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			16			3			23	
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		1093			650			819			796	
Travel Time (s)		16.6			12.7			12.4			12.1	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	10%	0%	0%	12%	0%	5%	3%	0%	0%	14%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	31	0	0	130	0	0	159	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0		31.0	31.0	
Total Split (s)	30.0	30.0	0.0	30.0	30.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	42.9%	42.9%	0.0%	42.9%	42.9%	0.0%	57.1%	57.1%	0.0%	57.1%	57.1%	0.0%
Yellow Time (s)	3.6	3.6		3.6	3.6		5.0	5.0		5.0	5.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		9.5			9.5			25.4			25.4	
Actuated g/C Ratio		0.25			0.25			0.68			0.68	
v/c Ratio		0.21			0.07			0.11			0.14	
Control Delay		11.0			11.1			4.8			4.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.0			11.1			4.8			4.5	
LOS		B			B			A			A	
Approach Delay		11.0			11.1			4.8			4.5	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		10			3			12			14	
Queue Length 95th (ft)		28			15			26			28	
Internal Link Dist (ft)		1013			570			739			716	
Turn Bay Length (ft)												
Base Capacity (vph)		1044			1086			1432			1391	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.08			0.03			0.09			0.11	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

Intersection Summary
Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 37.4
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.21
Intersection Signal Delay: 6.5 Intersection LOS: A
Intersection Capacity Utilization 38.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Pletcher Road & Route 18 (Creek Road)



Lanes, Volumes, Timings
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	46	9	81	23	7	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1444	0	1813	0	0	1801
Flt Permitted	0.960					0.995
Satd. Flow (perm)	1444	0	1813	0	0	1801
Link Speed (mph)	45		45			45
Link Distance (ft)	1130		1008			957
Travel Time (s)	17.1		15.3			14.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	26%	11%	1%	4%	14%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	113	0	0	85
Sign Control	Stop		Free			Free

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 19.6% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	46	9	81	23	7	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	50	10	88	25	8	77
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	193	101			113	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	193	101			113	
tC, single (s)	6.7	6.3			4.2	
tC, 2 stage (s)						
tF (s)	3.7	3.4			2.3	
p0 queue free %	93	99			99	
cM capacity (veh/h)	740	931			1405	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	60	113	85
Volume Left	50	0	8
Volume Right	10	25	0
cSH	766	1700	1405
Volume to Capacity	0.08	0.07	0.01
Queue Length 95th (ft)	6	0	0
Control Delay (s)	10.1	0.0	0.7
Lane LOS	B		A
Approach Delay (s)	10.1	0.0	0.7
Approach LOS	B		

Intersection Summary			
Average Delay		2.6	
Intersection Capacity Utilization		19.6%	ICU Level of Service
Analysis Period (min)		15	

Lanes, Volumes, Timings
12: Balmer Road & Site Driveway

11/16/2011

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	23	3	4	27	15	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		615	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)		25	25		25	25
Satd. Flow (prot)	1743	1214	0	1830	1081	0
Flt Permitted				0.994	0.957	
Satd. Flow (perm)	1743	1214	0	1830	1081	0
Link Speed (mph)	55			55	30	
Link Distance (ft)	765			745	383	
Travel Time (s)	9.5			9.2	8.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	9%	33%	25%	0%	73%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	4	0	39	21	0
Sign Control	Free			Free	Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 14.8% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
12: Balmer Road & Site Driveway

11/16/2011

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	23	3	4	27	15	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	29	4	5	34	19	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			32		72	29
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			32		72	29
tC, single (s)			4.3		7.1	6.2
tC, 2 stage (s)						
tF (s)			2.4		4.2	3.3
p0 queue free %			100		98	100
cM capacity (veh/h)			1443		779	1052

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	29	4	39	21
Volume Left	0	0	5	19
Volume Right	0	4	0	2
cSH	1700	1700	1443	804
Volume to Capacity	0.02	0.00	0.00	0.03
Queue Length 95th (ft)	0	0	0	2
Control Delay (s)	0.0	0.0	1.0	9.6
Lane LOS			A	A
Approach Delay (s)	0.0		1.0	9.6
Approach LOS				A

Intersection Summary				
Average Delay			2.6	
Intersection Capacity Utilization			14.8%	ICU Level of Service
Analysis Period (min)			15	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

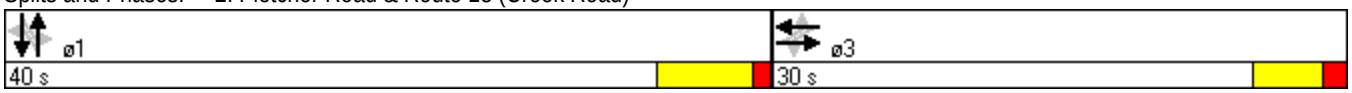
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	16	32	8	10	15	43	210	10	17	153	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1767	0	0	1765	0	0	1846	0	0	1789	0
Flt Permitted		0.789			0.888			0.910			0.965	
Satd. Flow (perm)	0	1437	0	0	1586	0	0	1693	0	0	1733	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			16			4			43	
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		1093			650			819			796	
Travel Time (s)		16.6			12.7			12.4			12.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	0%	2%	0%	0%	2%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	0	0	36	0	0	289	0	0	267	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0		31.0	31.0	
Total Split (s)	30.0	30.0	0.0	30.0	30.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	42.9%	42.9%	0.0%	42.9%	42.9%	0.0%	57.1%	57.1%	0.0%	57.1%	57.1%	0.0%
Yellow Time (s)	3.6	3.6		3.6	3.6		5.0	5.0		5.0	5.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		13.3			13.3			24.8			24.8	
Actuated g/C Ratio		0.34			0.34			0.63			0.63	
v/c Ratio		0.28			0.07			0.27			0.24	
Control Delay		14.5			10.5			6.9			5.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		14.5			10.5			6.9			5.8	
LOS		B			B			A			A	
Approach Delay		14.5			10.5			6.9			5.8	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		26			4			35			26	
Queue Length 95th (ft)		62			20			84			68	
Internal Link Dist (ft)		1013			570			739			716	
Turn Bay Length (ft)												
Base Capacity (vph)		914			1004			1327			1367	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.15			0.04			0.22			0.20	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

Intersection Summary
Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 39.4
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.28
Intersection Signal Delay: 8.2 Intersection LOS: A
Intersection Capacity Utilization 47.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Pletcher Road & Route 18 (Creek Road)



Lanes, Volumes, Timings
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	40	12	150	51	10	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1732	0	1826	0	0	1855
Flt Permitted	0.963					0.996
Satd. Flow (perm)	1732	0	1826	0	0	1855
Link Speed (mph)	45		45			45
Link Distance (ft)	1130		1008			957
Travel Time (s)	17.1		15.3			14.5
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	3%	0%	0%	2%	2%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	228	0	0	130
Sign Control	Stop		Free			Free

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 23.8% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	40	12	150	51	10	105
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	45	14	170	58	11	119
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	341	199			228	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	341	199			228	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	98			99	
cM capacity (veh/h)	647	847			1340	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	59	228	131
Volume Left	45	0	11
Volume Right	14	58	0
cSH	684	1700	1340
Volume to Capacity	0.09	0.13	0.01
Queue Length 95th (ft)	7	0	1
Control Delay (s)	10.8	0.0	0.7
Lane LOS	B		A
Approach Delay (s)	10.8	0.0	0.7
Approach LOS	B		

Intersection Summary			
Average Delay		1.7	
Intersection Capacity Utilization		23.8%	ICU Level of Service
Analysis Period (min)		15	

Lanes, Volumes, Timings
12: Balmer Road & Site Driveway

11/16/2011

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	37	1	0	36	6	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		615	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)		25	25		25	25
Satd. Flow (prot)	1900	1568	0	1900	1600	0
Flt Permitted					0.979	
Satd. Flow (perm)	1900	1568	0	1900	1600	0
Link Speed (mph)	55			55	30	
Link Distance (ft)	765			745	383	
Travel Time (s)	9.5			9.2	8.7	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	3%	0%	0%	17%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	1	0	42	16	0
Sign Control	Free			Free	Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 13.3% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
12: Balmer Road & Site Driveway

11/16/2011

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	37	1	0	36	6	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	44	1	0	42	7	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			45		86	44
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			45		86	44
tC, single (s)			4.1		6.6	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.7	3.3
p0 queue free %			100		99	99
cM capacity (veh/h)			1576		880	1032

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	44	1	42	16
Volume Left	0	0	0	7
Volume Right	0	1	0	9
cSH	1700	1700	1576	961
Volume to Capacity	0.03	0.00	0.00	0.02
Queue Length 95th (ft)	0	0	0	1
Control Delay (s)	0.0	0.0	0.0	8.8
Lane LOS				A
Approach Delay (s)	0.0		0.0	8.8
Approach LOS				A

Intersection Summary				
Average Delay			1.4	
Intersection Capacity Utilization			13.3%	ICU Level of Service
Analysis Period (min)			15	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

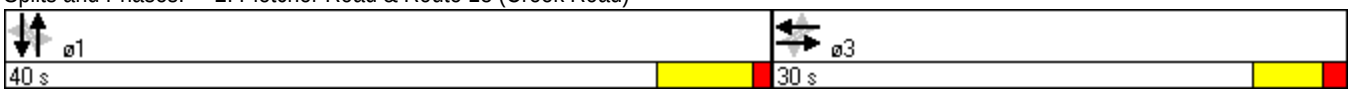
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	212	5	30	6	12	28	29	224	2	7	181	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1778	0	0	1732	0	0	1667	0	0	1626	0
Flt Permitted		0.710			0.944			0.928			0.988	
Satd. Flow (perm)	0	1316	0	0	1647	0	0	1556	0	0	1608	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		11			40			1			35	
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		1093			650			819			796	
Travel Time (s)		16.6			12.7			12.4			12.1	
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	15%	0%	0%	17%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	353	0	0	66	0	0	364	0	0	363	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0		31.0	31.0	
Total Split (s)	30.0	30.0	0.0	30.0	30.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	42.9%	42.9%	0.0%	42.9%	42.9%	0.0%	57.1%	57.1%	0.0%	57.1%	57.1%	0.0%
Yellow Time (s)	3.6	3.6		3.6	3.6		5.0	5.0		5.0	5.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		20.0			20.0			27.3			27.3	
Actuated g/C Ratio		0.34			0.34			0.47			0.47	
v/c Ratio		0.77			0.11			0.50			0.47	
Control Delay		30.3			8.0			14.6			12.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		30.3			8.0			14.6			12.8	
LOS		C			A			B			B	
Approach Delay		30.3			8.0			14.6			12.8	
Approach LOS		C			A			B			B	
Queue Length 50th (ft)		97			6			86			75	
Queue Length 95th (ft)		153			21			117			104	
Internal Link Dist (ft)		1013			570			739			716	
Turn Bay Length (ft)												
Base Capacity (vph)		577			737			919			963	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.61			0.09			0.40			0.38	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

Intersection Summary
Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 58.5
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 18.5 Intersection LOS: B
Intersection Capacity Utilization 55.6% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 2: Pletcher Road & Route 18 (Creek Road)



Lanes, Volumes, Timings
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	95	6	52	48	14	214
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1333	0	1333	0	0	1836
Flt Permitted	0.955					0.997
Satd. Flow (perm)	1333	0	1333	0	0	1836
Link Speed (mph)	45		45			45
Link Distance (ft)	1130		1008			957
Travel Time (s)	17.1		15.3			14.5
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles (%)	33%	67%	2%	67%	21%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	135	0	133	0	0	304
Sign Control	Stop		Free			Free

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 31.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	95	6	52	48	14	214
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	127	8	69	64	19	285
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	424	101			133	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	424	101			133	
tC, single (s)	6.7	6.9			4.3	
tC, 2 stage (s)						
tF (s)	3.8	3.9			2.4	
p0 queue free %	76	99			99	
cM capacity (veh/h)	525	803			1342	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	135	133	304
Volume Left	127	0	19
Volume Right	8	64	0
cSH	536	1700	1342
Volume to Capacity	0.25	0.08	0.01
Queue Length 95th (ft)	25	0	1
Control Delay (s)	14.0	0.0	0.6
Lane LOS	B		A
Approach Delay (s)	14.0	0.0	0.6
Approach LOS	B		

Intersection Summary				
Average Delay		3.6		
Intersection Capacity Utilization		31.0%	ICU Level of Service	A
Analysis Period (min)		15		

Lanes, Volumes, Timings
12: Balmer Road & Site Driveway

11/16/2011

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	26	40	9	34	35	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		615	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)		25	25		25	25
Satd. Flow (prot)	1827	859	0	1879	902	0
Flt Permitted				0.989	0.950	
Satd. Flow (perm)	1827	859	0	1879	902	0
Link Speed (mph)	55			55	30	
Link Distance (ft)	765			745	383	
Travel Time (s)	9.5			9.2	8.7	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Heavy Vehicles (%)	4%	88%	0%	0%	100%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	51	0	56	45	0
Sign Control	Free			Free	Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 19.0% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
12: Balmer Road & Site Driveway

11/16/2011

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	26	40	9	34	35	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	33	51	12	44	45	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			85		100	33
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			85		100	33
tC, single (s)			4.1		7.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.4	3.3
p0 queue free %			99		94	100
cM capacity (veh/h)			1525		702	1046

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	33	51	55	45
Volume Left	0	0	12	45
Volume Right	0	51	0	0
cSH	1700	1700	1525	702
Volume to Capacity	0.02	0.03	0.01	0.06
Queue Length 95th (ft)	0	0	1	5
Control Delay (s)	0.0	0.0	1.6	10.5
Lane LOS			A	B
Approach Delay (s)	0.0		1.6	10.5
Approach LOS				B

Intersection Summary				
Average Delay			3.0	
Intersection Capacity Utilization			19.0%	ICU Level of Service A
Analysis Period (min)			15	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

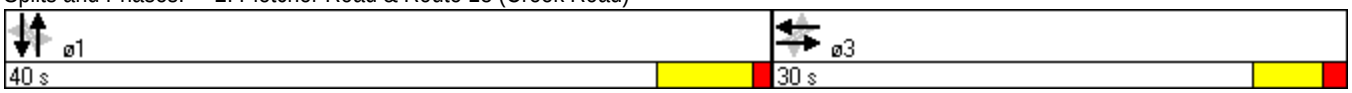
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Volume (vph)	24	10	30	3	8	12	22	102	3	5	112	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1719	0	0	1685	0	0	1483	0	0	1468	0
Flt Permitted		0.866			0.938			0.931			0.989	
Satd. Flow (perm)	0	1516	0	0	1590	0	0	1394	0	0	1455	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41			16			2			19	
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		1093			650			819			796	
Travel Time (s)		16.6			12.7			12.4			12.1	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Heavy Vehicles (%)	0%	10%	0%	0%	12%	0%	5%	32%	0%	0%	31%	9%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	87	0	0	31	0	0	172	0	0	188	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0		31.0	31.0	
Total Split (s)	30.0	30.0	0.0	30.0	30.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	42.9%	42.9%	0.0%	42.9%	42.9%	0.0%	57.1%	57.1%	0.0%	57.1%	57.1%	0.0%
Yellow Time (s)	3.6	3.6		3.6	3.6		5.0	5.0		5.0	5.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		9.5			9.5			25.5			25.5	
Actuated g/C Ratio		0.26			0.26			0.69			0.69	
v/c Ratio		0.21			0.07			0.18			0.19	
Control Delay		11.0			11.1			5.2			4.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		11.0			11.1			5.2			4.8	
LOS		B			B			A			A	
Approach Delay		11.0			11.1			5.2			4.8	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		10			3			18			17	
Queue Length 95th (ft)		28			15			34			34	
Internal Link Dist (ft)		1013			570			739			716	
Turn Bay Length (ft)												
Base Capacity (vph)		1058			1101			1192			1247	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.08			0.03			0.14			0.15	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

Intersection Summary
Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 37
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.21
Intersection Signal Delay: 6.5 Intersection LOS: A
Intersection Capacity Utilization 38.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Pletcher Road & Route 18 (Creek Road)



Lanes, Volumes, Timings
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	68	11	81	54	10	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1218	0	1437	0	0	1741
Flt Permitted	0.959					0.994
Satd. Flow (perm)	1218	0	1437	0	0	1741
Link Speed (mph)	45		45			45
Link Distance (ft)	1130		1008			957
Travel Time (s)	17.1		15.3			14.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	50%	27%	1%	61%	40%	4%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	0	147	0	0	88
Sign Control	Stop		Free			Free

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 23.3% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	68	11	81	54	10	71
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	74	12	88	59	11	77
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	216	117			147	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	216	117			147	
tC, single (s)	6.9	6.5			4.5	
tC, 2 stage (s)						
tF (s)	4.0	3.5			2.6	
p0 queue free %	89	99			99	
cM capacity (veh/h)	670	871			1233	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	86	147	88
Volume Left	74	0	11
Volume Right	12	59	0
cSH	693	1700	1233
Volume to Capacity	0.12	0.09	0.01
Queue Length 95th (ft)	11	0	1
Control Delay (s)	10.9	0.0	1.0
Lane LOS	B		A
Approach Delay (s)	10.9	0.0	1.0
Approach LOS	B		

Intersection Summary			
Average Delay		3.2	
Intersection Capacity Utilization		23.3%	ICU Level of Service A
Analysis Period (min)		15	

Lanes, Volumes, Timings
12: Balmer Road & Site Driveway

11/16/2011

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	23	37	4	27	39	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		615	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)		25	25		25	25
Satd. Flow (prot)	1743	828	0	1830	967	0
Flt Permitted				0.994	0.954	
Satd. Flow (perm)	1743	828	0	1830	967	0
Link Speed (mph)	55			55	30	
Link Distance (ft)	765			745	383	
Travel Time (s)	9.5			9.2	8.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	9%	95%	25%	0%	90%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	46	0	39	51	0
Sign Control	Free			Free	Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 14.8% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
12: Balmer Road & Site Driveway

11/16/2011

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	23	37	4	27	39	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	29	46	5	34	49	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			75		72	29
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			75		72	29
tC, single (s)			4.3		7.3	6.2
tC, 2 stage (s)						
tF (s)			2.4		4.3	3.3
p0 queue free %			100		94	100
cM capacity (veh/h)			1390		750	1052

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	29	46	39	51
Volume Left	0	0	5	49
Volume Right	0	46	0	2
cSH	1700	1700	1390	761
Volume to Capacity	0.02	0.03	0.00	0.07
Queue Length 95th (ft)	0	0	0	5
Control Delay (s)	0.0	0.0	1.0	10.1
Lane LOS			A	B
Approach Delay (s)	0.0		1.0	10.1
Approach LOS				B

Intersection Summary				
Average Delay			3.4	
Intersection Capacity Utilization			14.8%	ICU Level of Service A
Analysis Period (min)			15	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

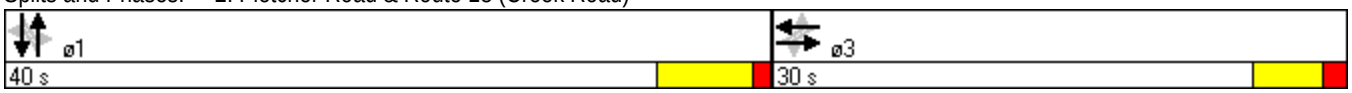
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	79	16	32	8	10	15	43	232	10	17	175	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	0	1767	0	0	1765	0	0	1710	0	0	1666	0
Flt Permitted		0.789			0.889			0.912			0.966	
Satd. Flow (perm)	0	1437	0	0	1588	0	0	1571	0	0	1614	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			16			4			38	
Link Speed (mph)		45			35			45			45	
Link Distance (ft)		1093			650			819			796	
Travel Time (s)		16.6			12.7			12.4			12.1	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	3%	0%	0%	0%	0%	12%	0%	0%	14%	1%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	0	0	36	0	0	313	0	0	291	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		3			3			1			1	
Permitted Phases	3			3			1			1		
Detector Phase	3	3		3	3		1	1		1	1	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		25.0	25.0		25.0	25.0	
Minimum Split (s)	13.0	13.0		13.0	13.0		31.0	31.0		31.0	31.0	
Total Split (s)	30.0	30.0	0.0	30.0	30.0	0.0	40.0	40.0	0.0	40.0	40.0	0.0
Total Split (%)	42.9%	42.9%	0.0%	42.9%	42.9%	0.0%	57.1%	57.1%	0.0%	57.1%	57.1%	0.0%
Yellow Time (s)	3.6	3.6		3.6	3.6		5.0	5.0		5.0	5.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0	4.0	6.0	6.0	4.0	6.0	6.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		None	None		None	None	
Act Effct Green (s)		13.6			13.6			24.9			24.9	
Actuated g/C Ratio		0.34			0.34			0.63			0.63	
v/c Ratio		0.27			0.06			0.32			0.28	
Control Delay		14.5			10.5			7.5			6.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		14.5			10.5			7.5			6.4	
LOS		B			B			A			A	
Approach Delay		14.5			10.5			7.5			6.4	
Approach LOS		B			B			A			A	
Queue Length 50th (ft)		26			4			39			31	
Queue Length 95th (ft)		64			21			98			80	
Internal Link Dist (ft)		1013			570			739			716	
Turn Bay Length (ft)												
Base Capacity (vph)		910			1001			1226			1267	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.15			0.04			0.26			0.23	

Lanes, Volumes, Timings
2: Pletcher Road & Route 18 (Creek Road)

11/16/2011

Intersection Summary
Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 39.6
Natural Cycle: 45
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.32
Intersection Signal Delay: 8.5 Intersection LOS: A
Intersection Capacity Utilization 49.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Pletcher Road & Route 18 (Creek Road)



Lanes, Volumes, Timings
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	62	14	150	73	13	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1341	0	1644	0	0	1810
Flt Permitted	0.961					0.994
Satd. Flow (perm)	1341	0	1644	0	0	1810
Link Speed (mph)	45		45			45
Link Distance (ft)	1130		1008			957
Travel Time (s)	17.1		15.3			14.5
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	37%	14%	0%	32%	23%	2%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	0	253	0	0	134
Sign Control	Stop		Free			Free

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 27.4% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
8: Balmer Road & Route 18 (Creek Road)

11/16/2011

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	62	14	150	73	13	105
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	70	16	170	83	15	119
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	361	212			253	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	361	212			253	
tC, single (s)	6.8	6.3			4.3	
tC, 2 stage (s)						
tF (s)	3.8	3.4			2.4	
p0 queue free %	88	98			99	
cM capacity (veh/h)	567	799			1199	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	86	253	134
Volume Left	70	0	15
Volume Right	16	83	0
cSH	599	1700	1199
Volume to Capacity	0.14	0.15	0.01
Queue Length 95th (ft)	13	0	1
Control Delay (s)	12.0	0.0	1.0
Lane LOS	B		A
Approach Delay (s)	12.0	0.0	1.0
Approach LOS	B		

Intersection Summary				
Average Delay		2.5		
Intersection Capacity Utilization		27.4%	ICU Level of Service	A
Analysis Period (min)		15		

Lanes, Volumes, Timings
12: Balmer Road & Site Driveway

11/16/2011

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	37	26	0	36	30	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		615	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)		25	25		25	25
Satd. Flow (prot)	1900	824	0	1900	1070	0
Flt Permitted					0.962	
Satd. Flow (perm)	1900	824	0	1900	1070	0
Link Speed (mph)	55			55	30	
Link Distance (ft)	765			745	383	
Travel Time (s)	9.5			9.2	8.7	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles (%)	0%	96%	0%	0%	83%	0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	31	0	42	44	0
Sign Control	Free			Free	Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 13.3% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
12: Balmer Road & Site Driveway

11/16/2011

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	37	26	0	36	30	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	44	31	0	42	35	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			74		86	44
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			74		86	44
tC, single (s)			4.1		7.2	6.2
tC, 2 stage (s)						
tF (s)			2.2		4.2	3.3
p0 queue free %			100		95	99
cM capacity (veh/h)			1538		750	1032

Direction, Lane #	EB 1	EB 2	WB 1	NB 1
Volume Total	44	31	42	45
Volume Left	0	0	0	35
Volume Right	0	31	0	9
cSH	1700	1700	1538	796
Volume to Capacity	0.03	0.02	0.00	0.06
Queue Length 95th (ft)	0	0	0	4
Control Delay (s)	0.0	0.0	0.0	9.8
Lane LOS				A
Approach Delay (s)	0.0		0.0	9.8
Approach LOS				A

Intersection Summary				
Average Delay			2.7	
Intersection Capacity Utilization			13.3%	ICU Level of Service A
Analysis Period (min)			15	

ARCADIS

Appendix F

Siting Board Decisions for RMU-1

New York State Department of Environmental Conservation
0 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

COMPLETED

cc: J Stanulonis
J. Knickerbocker
J Hines
G Spira
W Mounts

VIA CERTIFIED MAIL

December 10, 1993

Daniel M. Darragh, Esq.
Eckert, Seamans,
Cherin & Mellott
42nd Floor
600 Grant Street
Pittsburgh, Pennsylvania 15219

RE: CWM Chemical Services, Inc.
Decision of the Industrial Hazardous Waste Facility Siting Board
Issued - December 10, 1993

Dear Mr. Darragh:

Enclosed are copies of the Decision of the Industrial Hazardous Waste Facility Siting Board and the executed Certificate of Environmental Safety and Public Necessity in the above entitled matter, dated December 10, 1993.

A copy of this Decision is also being sent to all other persons believed to have an interest in this matter.

Very truly yours,

Robert H. Feller

Robert H. Feller
Counsel
Industrial Hazardous Waste
Facility Siting Board

Enclosure

cc: Peter Bush
Region 9, NYSDEC/Abby Snyder, Esq.
Member of the Siting Board

STATE OF NEW YORK
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 Wolf Road
Albany, New York 12233-1550

In the Matter of the Application

- of -

CWM CHEMICAL SERVICES, INC.

for permits to construct and operate a 47.1 acre hazardous waste landfill at 1550 Balmer Road, Model City, New York.

DEC Project No. 9-2934-00022/00036-0

DECISION
OF THE
INDUSTRIAL HAZARDOUS WASTE FACILITY SITING BOARD

December 10, 1993

DECISION OF THE INDUSTRIAL HAZARDOUS WASTE FACILITY SITING BOARD

Introduction

This Decision relates to the application of CWM Chemical Services, Inc. ("CWM" or the "Applicant") for a Certificate of Environmental Safety and Public Necessity (the "Certificate") pursuant to ECL Article 27 Title 11 to site the proposed Residuals Management Unit No. 1 ("RMU-1") at its Model City Facility in the Towns of Porter and Lewiston in Niagara County. As required by law, Governor Cuomo constituted this Facility Siting Board (the "Board") in May 1993.

The Board is obligated to render a decision on whether to grant, conditionally grant or deny a certificate for the facility. Typically, that decision is made after an adjudicatory hearing which is held by an Administrative Law Judge ("ALJ") of the Department of Environmental Conservation (the "Department"). In this instance, the ALJ submitted a report which indicated that there were no issues that needed to be adjudicated in a hearing. Nonetheless, the Board is required to make four findings required by Environmental Conservation Law ("ECL") §27-1105(3)(f) and, as an involved agency under the State Environmental Quality Review Act ("SEQRA"), it is required to make findings pursuant to ECL §8-0109(8).

In reaching this Decision, the Board has reviewed the Hearing Report prepared by the ALJ, CWM's application (as supplemented by certain correspondence), the draft permit prepared by the Department Staff and the Final Environmental Impact Statement ("FEIS"). The Board took official notice of the Decision of the Siting Board in the case of the CWM application for Secured Landfill-12 ("SLF-12 Decision"). In addition, the chairman of the Board and several Board members attended a meeting held between the Citizen Advisory Committee for RMU-1 (the "CAC") and the Applicant. At that meeting, an agreement resolving the major issues of concern to the CAC was announced. The resolution of these issues is incorporated into an agreement between the Applicant and the Town of Lewiston, the Town of Porter, the County of Niagara, the CAC and the Residents Organized for Lewiston-Porter's Environment, Inc. Any potential issues between the Applicant and the Department Staff were resolved and their resolution is reflected in the current draft permits.

When it became likely that neither the Department nor any third party intervenor would seek to adjudicate any issues, the Board undertook its own review of the documents then available to determine whether it was satisfied that the Applicant had made the necessary showing for all of the criteria the Board must judge and for the findings it must make. Based on that review, on September 13, 1993 counsel for the Board notified the Applicant that the Board had tentatively determined that, with the addition

of one condition related to transportation, the Certificate could be issued. The Applicant was also notified at that time that, if it objected to the imposition of this condition, it was entitled to a hearing regarding the need for the condition. By letter dated September 29, 1993, counsel for the Applicant indicated that it would accept a similar condition that was acceptable to the Board. That condition is attached as Appendix A to this Decision and is incorporated hereto.

The Board is now prepared to issue its final decision in this matter. Although the Board's decision does not conform in all respects to the position taken by the Applicant (particularly in reference to the siting criteria), the Applicant is not entitled to a hearing on these differences as they have no potential significance to the outcome of this proceeding.

The discussion below addresses those areas where the Board does not agree with the Applicant's assessment of criteria upon which it must make findings. As to other areas, the Board adopts as part of its Decision the Applicant's assessment of these criteria as such appears in its application (Table 16 - Preliminary Siting Evaluation Worksheet for RMU-1). The discussion also addresses those criteria that were reweighted from the suggested weightings for landfills contained in Appendix 17 to 6 NYCRR Part 361. The Board does not accept the reweighting of the siting consideration for areas of mineral exploitation proposed by the Applicant.

Siting Criteria

Legal Issue

For purposes of evaluating the siting criteria contained in 6 NYCRR §361.7, the Board concluded that the site that was being approved included the entire area within the boundary of the Model City Facility, including the entry gate and the weigh station. The term "site" is defined as "...that parcel of property designated by the Applicant in the application submitted pursuant to this Part" [6 NYCRR §361.1(c)(15)].

Although the application designates the boundaries of RMU-1 as the site, the Board finds this designation is untenable. The landfill itself cannot function without other support facilities located at the Model City Facility. Therefore, if an approval were given based on the boundaries of RMU-1, the ancillary facilities where hazardous waste is handled or treated/processed would not have been approved under the siting law and could not legally operate in support of the landfill.

Findings on Siting Criteria

The Board modifies the Applicant's proposed findings on certain siting criteria as set forth below. These findings are based upon the imposition of the condition set forth in Appendix A to this Decision. A summary of the Board's conclusions on all siting criteria is contained in Appendix B to this Decision. The total score for the facility is 182.4, and therefore it is within the acceptable limits defined by regulation [6 NYCRR §361.7(c)(3)].

3(a) Mode of Transportation

The Applicant assigned a rating of (1) to this criterion based in large part on information from a handbook prepared by the Federal Emergency Management Agency, the U.S. Department of Transportation and the U.S. Environmental Protection Agency.

The Board examined the documents referenced in the application as well as the 1986 Congressional Office of Technology Assessment ("OTA") report cited in the SLF-12 Decision. Relying principally on the study done by the OTA, the Board concludes that truck transportation has a higher accident rate than either of the alternatives. Therefore, the Board assigned a rating of (3) to this criterion.

3(e) Transportation Restrictions

The Applicant assigned a rating of (1) to this criterion based on its evaluation that the average number of restrictions per mile was less than four.

The Board identified a total of 45 traffic restrictions over the 8.6 miles from the site entrance to the nearest highway. This evaluation results in a average of 5 traffic restrictions per miles which conforms to a rating of (2).

5(a) Utility Lines

The Applicant assigned a rating of (1) to this criterion asserting that the nearest high power utility line is located at the western edge of the CWM Model City Facility, 0.6 miles from the RMU-1 site and therefore not within the site's vicinity.

The Board assigned a (2) to this criterion. The Board has defined the "site" as the area within the boundary line of the CWM Model City Facility. Therefore the high power utility line is in the vicinity of the site but relocation is not necessary.

6(a) Consistency with the Intent of Master Land Use Plan

The Applicant assigned a rating of (1) to this criterion. The Applicant cites the present town zoning for its determination. The

proposed RMU-1 is located entirely within the town of Porter in an area zoned "heavy industry" and therefore the Applicant concludes that the proposed unit is consistent with the specific intent and overall approach to the Town's Master Plan.

The Board assigned a rating of (2) to this criterion. The 1979 Porter-South Central Master Plan makes reference to a wetland which is located within the proposed RMU-1 site. The plan recognizes the wetland as an important environmental consideration and recommends that the wetland be protected. The Board views the proposed elimination of this wetland as an inconsistency with the specific intent of the plan. There were no inconsistencies concerning the portion of the site located in the Town of Lewiston.

7(a) Contamination of Ground and Surface Waters

The Applicant assigned a rating of (2) to this criterion reasoning that from a hydrogeological standpoint the site is in an optimum location.

The Board assigned a rating of (3) to this criterion. The Board's rationale is based on the fact that the RMU-1 site will be partly located in a 7 acre federally protected wetland and the Applicant's wetlands mitigation plan will require extensive effort to overcome this condition. Also, construction of RMU-1 will eliminate 16 acre-feet of floodwater storage capacity, for which extensive mitigation work is planned.

8(a) Water Supply Sources

The Applicant originally assigned a rating of (1) to this criterion stating that the site was not close to drinking water, recreational waters or other water supplies. However, the Applicant later conceded that an active private water supply well does exist in close proximity to the site and therefore changed its proposed rating from a (1) to a (2). The Board concurs with the rating of (2).

9. Fire and Explosions

The Board voted to reduce the siting consideration weight for this criteria from 11 to 9. The Board determined that the effect of fire or explosion, should one occur, would be limited to the site, which is far removed from the nearest population. Further, explosives are neither used nor stored at the site, and the wastes disposed of at the site are not explosive by nature. The Board concluded that this criterion has less importance and therefore assigned it a lower weight.

9(c) Proximity to Fire Department and Firefighting Water Supply

The Applicant assigned a rating of (1) to this criterion asserting that it has on-site firefighting capability in the form of a hose-tender truck and an adequate water supply.

The Board assigned a rating of (2) to this criterion. The Board concludes that other equipment owned by the Applicant are not equivalent to the fire- fighting equipment normally used by a fire department. Also, the site is further than 3 miles to the nearest fire department.

10(b) Prevailing Wind Direction

The Applicant assigned a rating of (1) to this criterion contending that the most sensitive receptors are upwind of the site, the prevailing wind direction coming from the southwest.

The Board assigned a rating of (3) to this criterion noting that the Village of Ransomville is located northeast of the site and therefore is downwind of the proposed site.

14. Open Space, Recreational and Visual Impacts

The Board voted to increase the siting consideration weight from 3 to 5. The Board determined that this siting consideration should be given greater weight in recognition of the importance of this area to the community as an open space resource.

14(c) Visual Impacts

The Applicant assigned a rating of (1) to this criterion contending that screening by existing vegetation will Block RMU-1 from local passers-by on Balmer Road.

The Board assigned a rating of (2) to this criterion because the lighting used at the facility for night work could make the facility readily noticeable to passers-by.

Need

The proposed RMU-1 facility constitutes a critical environmental management resource for New York State. Under federal law, each state must demonstrate the continuing capacity to manage all of the hazardous waste generated within its borders. New York State has no other commercial land burial facility for hazardous waste and therefore this project is needed if the State is to be able to meet the requirements of the Superfund Amendments and Reauthorization Act ("SARA") (Pub. L. No. 99-499) for hazardous wastes that cannot be disposed of through other means.

The facility also constitutes a significant economic development resource providing New York businesses with a cost-effective disposal site for treated waste materials and serving as a disposal site for treated remedial wastes. These functions will support the needs of existing industry and should enable the reuse of old, abandoned industrial sites for new economic activity.

Because this new resource is so valuable, it is crucial that its useful life be extended as long as possible. The Board recognizes and supports the efforts of the Department to do so through limiting the types of wastes that can be land-buried and through requiring generators to reduce the amount of hazardous waste they produce. The Board urges the Department to continue using all available authority to maximize the useful life of this facility.

Findings

ECL Article 27 Title 11

The Siting Board finds that the record of the hearing in this matter supports the following conclusions:

1. Residential areas and contiguous populations will not be endangered by the siting of the proposed facility;

2. The proposed facility attains an approvable score with respect to the siting criteria;

3. There is a need for the proposed facility; and

4. The construction and operation of the proposed facility will be in the public interest.

SEQRA

The Board has given consideration to the FEIS and finds that it meets all the requirements of 6 NYCRR Part 617.

The Board further finds:

(1) that consistent with social, economic and other essential considerations from among the reasonable alternatives thereto, the action which is being approved is one which minimizes or avoids adverse environmental effects to the maximum extent practicable, including the effects disclosed in the FEIS; and

(2) that consistent with social, economic and other essential considerations, to the maximum extent practicable, adverse environmental effects revealed in the environmental impact

statement process will be minimized or avoided by the conditions that are imposed by this Decision.

Conclusion

The Board therefore determines that this application is approvable, as modified by the permit conditions that are contained in the draft permit prepared by the Department and by the condition contained in Appendix A to this Decision. The Board authorizes the Chairman or his designee to issue a Certificate of Environmental Safety and Public Necessity.

Peter Bush

PETER BUSH
Designee for
THOMAS C. JORLING
Commissioner,
NYS Department of
Conservation and
Chairman of the Siting Board

WILLIAM FERRETTI
Designee for
VINCENT TESE
Commissioner
NYS Department of
Economic Development and
Member of the Siting Board

ALLISON WAKEMAN
Designee for
MARK R. CHASSIN, M.D.
Commissioner
NYS Department of Health and
Member of the Siting Board

DAVID PILLIOD
Designee for
GAIL S. SHAFFER
Secretary of State
NYS Department of State and
Member of the Siting Board

EUGENE NOWICKI
Designee for
JOHN C. EGAN
Commissioner
NYS Department of Transportation
and Member of the Siting Board

Dated: December 10 , 1993
Albany, New York

statement process will be minimized or avoided by the conditions that are imposed by this Decision.

Conclusion

The Board therefore determines that this application is approvable, as modified by the permit conditions that are contained in the draft permit prepared by the Department and by the condition contained in Appendix A to this Decision. The Board authorizes the Chairman or his designee to issue a Certificate of Environmental Safety and Public Necessity.

PETER BUSH
Designee for
THOMAS C. JORLING
Commissioner,
NYS Department of
Conservation and
Chairman of the Siting Board

WILLIAM FERRETTI
Designee for
VINCENT TESE
Commissioner
NYS Department of
Economic Development and
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NYS Department of Health and
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DAVID PILLIOD
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GAIL S. SHAFFER
Secretary of State
NYS Department of State and
Member of the Siting Board

EUGENE NOWICKI
Designee for
JOHN C. EGAN
Commissioner
NYS Department of Transportation
and Member of the Siting Board

Dated: December 10, 1993
Albany, New York

statement process will be minimized or avoided by the conditions that are imposed by this Decision.

Conclusion

The Board therefore determines that this application is approvable, as modified by the permit conditions that are contained in the draft permit prepared by the Department and by the condition contained in Appendix A to this Decision. The Board authorizes the Chairman or his designee to issue a Certificate of Environmental Safety and Public Necessity.

PETER BUSH
Designee for
THOMAS C. JORLING
Commissioner,
NYS Department of
Conservation and
Chairman of the Siting Board

WILLIAM FERRETTI
Designee for
VINCENT TESE
Commissioner
NYS Department of
Economic Development and
Member of the Siting Board

ALLISON WAKEMAN
Designee for
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DAVID PILLIOD
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Secretary of State
NYS Department of State and
Member of the Siting Board

EUGENE NOWICKI
Designee for
JOHN C. EGAN
Commissioner
NYS Department of Transportation
and Member of the Siting Board

Dated: December 10 , 1993
Albany, New York

statement process will be minimized or avoided by the conditions that are imposed by this Decision.

Conclusion

The Board therefore determines that this application is approvable, as modified by the permit conditions that are contained in the draft permit prepared by the Department and by the condition contained in Appendix A to this Decision. The Board authorizes the Chairman or his designee to issue a Certificate of Environmental Safety and Public Necessity.

PETER BUSH
Designee for
THOMAS C. JORLING
Commissioner,
NYS Department of
Conservation and
Chairman of the Siting Board

WILLIAM FERRETTI
Designee for
VINCENT TESE
Commissioner
NYS Department of
Economic Development and
Member of the Siting Board

ALLISON WAKEMAN
Designee for
MARK R. CHASSIN, M.D.
Commissioner
NYS Department of Health and
Member of the Siting Board

DAVID PILLIOD
Designee for
GAIL S. SHAFFER
Secretary of State
NYS Department of State and
Member of the Siting Board

EUGENE NOWICKI
Designee for
JOHN C. EGAN
Commissioner
NYS Department of Transportation
and Member of the Siting Board

Dated: December 8, 1993
Albany, New York

statement process will be minimized or avoided by the conditions that are imposed by this Decision.

Conclusion

The Board therefore determines that this application is approvable, as modified by the permit conditions that are contained in the draft permit prepared by the Department and by the condition contained in Appendix A to this Decision. The Board authorizes the Chairman or his designee to issue a Certificate of Environmental Safety and Public Necessity.

PETER BUSH
Designee for
THOMAS C. JORLING
Commissioner,
NYS Department of
Conservation and
Chairman of the Siting Board

WILLIAM FERRETTI
Designee for
VINCENT TESE
Commissioner
NYS Department of
Economic Development and
Member of the Siting Board

ALLISON WAKEMAN
Designee for
MARK R. CHASSIN, M.D.
Commissioner
NYS Department of Health and
Member of the Siting Board

DAVID PILLIOD
Designee for
GAIL S. SHAFFER
Secretary of State
NYS Department of State and
Member of the Siting Board

EUGENE NOWICKI
Designee for
JOHN C. EGAN
Commissioner
NYS Department of Transportation
and Member of the Siting Board

Dated: December 10, 1993
Albany, New York

MINORITY OPINION

By

CWM INDUSTRIAL HAZARDOUS WASTE FACILITY SITING BOARD

In the matter of the Application of

CWM Chemical Services, Inc.

The CWM Industrial Hazardous Waste Siting Board was charged to review the Article 27, Title 11, Environmental Conservation Law, Part 361 Application from CWM Chemical Services and to make a determination as to the project's compliance with the siting criteria.

To accomplish this task, the Board reviewed the application as well as the Draft Environmental Impact Statement and subsequently the Final Environmental Impact Statement.

The Board attended a meeting with the Community Advisory Committee (CAC) and CWM as well as the Legislative meetings which were held to determine any issues not resolved. The Board listened to statements made by the public, both in favor and against the project, as well as reviewed written statements by both sides.

The materials furnished to the Board to assist in its determination raised many issues. The Board on three occasions had to refer back to the applicant a total of 29 requests for clarification on matters that had been supplied. In several instances, the replies were not consistent with the application documents.

The Board disagreed with the applicant's scoring of the criteria, pursuant to subdivision one of Article 27, Title 11, in nine instances. The total scoring of the Board was 182.4 as

compared to the applicant's scoring of 149. The Minority's tentative scoring is 200.9 which would make the siting of this facility NOT APPROPRIATE at the proposed site. The Minority's summary scoring for the siting criteria is contained in Appendix C to the Decision.

The Minority Board members disagree with the Majority on the rating of Criteria 1 (Population Density).

The Siting Board concluded that the site being considered included the entire area within the boundary of the Model City Facility because, according to the Board's definition, the landfill cannot function without other support facilities. The Minority concludes that the effluent pipeline to the Niagara River is also an essential component of the facility and that the land, either owned or leased by the applicant, should be included in the site designation. That being the case, the Minority now finds that the population of the area neighboring the facility is very high and the potential for growth is also very high. The current building pattern evidences that the population will grow at a rate higher than predicted. Within a quarter of a mile from the facility is the Lew-Port school which houses some 2700 students and 350 employees. Also within a half mile of the site, as defined by the Minority, are the Youngstown Estates, Collingswood Estates and Tranquility Acres housing developments and the U.S. Army and National Guard training site. Approximately 3884 residential and non-residential persons are located within a half mile of the site.

Therefore, the Minority would assign a rating of (3) to both siting criteria 1(a) and 1(b).

The Minority disagrees with the Majority on the Criteria rating of Item 4(a) (Proximity to Incompatible Structures).

The Minority finds that there are substantial structures within a quarter mile of the site, as defined by the Minority: the Lew-Port school campus, U.S. Army and National Guard training facilities, a restaurant, a sewer pump lift station and several residences. Because of their proximity to the site they are all at risk from the facilities activities.

Therefore, the Minority would assign a rating of (3) to siting criterion 4(a).

The Minority disagrees with the SEQRA findings of the Majority in that the applicant did not answer the question of reasonable alternative sites to this location for hazardous waste treatment, storage and final disposal. While the applicant currently operates three hazardous waste landfills, that are as large or larger than this proposed site, no evidence was presented to show that either or all of these sites could not handle the waste materials expected to come to the proposed site. The question of whether rail, water or air transportation could be utilized at these other sites was not offered for discussion. Alternatives to landfilling were not adequately presented for study. These items should have been adjudicated.

The minority opinion is that this site is NOT APPROPRIATE for a hazardous waste disposal facility because of the following:

1. The density of residential and non-residential population neighboring the site and transportation route.

2. The construction and operation of this facility will not be in the best interest of the residents of Lewiston or Porter.

3. The scoring of the Criteria exceeds 200.

ERWIN K. FARBER
Member of the Siting Board

PHILIP FRANDINA
Member of the Siting Board

PETER DIACHUN
Member of the Siting Board

December 7, 1993

1. Residential areas and contiguous populations will be endangered by the siting of the proposed facility.

2. The construction and operation of this facility will not be in the best interest of the residents of Lewiston or Porter.

3. The scoring of the Criteria exceeds 200.

ERWIN K. FARBER
Member of the Siting Board

PHILIP F. FRANDINA
Member of the Siting Board

PETER DIACHUN
Member of the Siting Board

December 7, 1993

1. The density of residential and non-residential population neighboring the site and transportation route.

2. The construction and operation of this facility will not be in the best interest of the residents of Lewiston or Porter.

3. The scoring of the Criteria exceeds 200.

ERWIN K. FARBER
Member of the Siting Board

PHILIP FRANDINA
Member of the Siting Board

PETER DIACHUN
Member of the Siting Board

December 9, 1993

State of New York
Industrial Hazardous Waste Siting Board
Certificate of Environmental Safety
and Public Necessity

The Industrial Hazardous Waste Siting Board ("the siting board") issues this certificate to:

CWM Chemical Services, Inc. ("CWM") in respect to Residuals Management Unit No. 1 ("RMU-1") identified by New York State Department of Environmental Conservation ("DEC") Project No. 9-2934-00022/00036-0 and approved in the Board's Decision dated December 10, 1993.

Description of the Project

The proposed RMU-1 project is located at 1550 Balmer Road, Model City, in the Towns of Porter and Lewiston, Niagara County.

The project is a 47.1-acre landfill for 2.8 million cubic yards of solid/hazardous waste. As proposed, it will include a double composite bottom liner; two leachate collection systems; a leachate lift station; air, surface water and groundwater monitoring; a stormwater retention basin, with ditching; soil/gravel stockpiles; and compensatory wetlands and flood water storage. Varying amounts of settled stormwater will be batched and discharged to a ditch on Twelve Mile Creek. Air emissions will be vented at the lift station and leachate manways. A 7.1-acre federally regulated wetland will be filled. Waste transporters will reach the site by means of N.Y. Route 104, N.Y. Route 18, and then Balmer Road for a distance of 2.25 miles.

The siting board has conditioned approval of this project upon inclusion of an additional special condition in the project's DEC permits. The text of this condition, which regulates transportation of wastes, is attached to the siting board's decision in this matter.

This Certificate enables CWM to locate the project at its Model City site as approved and to proceed to construction of the project, but only if the DEC issues the necessary permits under the Environmental Conservation Law and then only consistent with the conditions of such permits. Upon the issuance of such permits, this Certificate shall merge therewith and become part thereof, enforceable as such, pursuant to 6 NYCRR Section 361.6(a)(4).

INDUSTRIAL HAZARDOUS WASTE FACILITY SITING BOARD

Thomas C. Jorling, Chair

Peter Bush

BY: Peter Bush, Designee

December 10, 1993
(Date Issued)

APPENDIX A

Amendment to CWM Transportation Condition

All trucks transporting, in bulk, blended fuels, PCB contaminated oils, or liquid or solid materials which present a risk of vapor release or fuming will be scheduled to arrive or depart the facility between 5:00 a.m. and 7:00 a.m. or between 4:00 p.m. and 9:00 p.m. CWM Chemical Services, Inc. ("CWM") will obtain a copy of the Lew-Port School "event" calendar and attempt to schedule shipments of the aforesaid materials so as to avoid events that are expected to be heavily attended.

No trucks carrying hazardous waste will be scheduled for arrival or departure between 7:30 a.m. and 9:00 a.m. or between 2:15 p.m. and 3:45 p.m. on days when the Lewiston-Porter School complex is in session.

Trucks carrying hazardous wastes to the facility and arriving via I-190 shall use the existing designated route. Trucks carrying hazardous wastes to the facility arriving from the eastern part of Niagara County shall use the designated state highways to Balmer Road. CWM will designate an alternative inbound route for trucks arriving via I-190 if adequate traffic safety devices (signals) are installed at the cloverleaf off ramp left hand turn onto Rt. 104 East.

CWM shall explicitly incorporate the above requirements in all authorizations that are granted to transporters who list the Model City facility site at 1550 Balmer Road in the Towns of Porter and Lewiston, Niagara County, on their New York State Part 364 hazardous waste transporter permits.

It is intended that the above requirements as they apply to all transporters (including those operating under the control of Chemical Waste Management, Inc. or any other corporate affiliate of CWM) be enforced by CWM as provided for in the CWM Model City Transportation Rules and Regulations, as amended by the Site Operations Plan (Appendix 1 of the CAC Agreement dated July 21, 1993). CWM's failure to explicitly incorporate the conditions referenced above in signing a transporter's Part 364 permit form or its failure to enforce those conditions as provided for in the CWM Model City Transporter Rules and Regulations, as amended by the Site Operations Plan, shall constitute a violation of its Part 373 Permit to operate RMU-1, and hence a violation of the Environmental Conservation Law ("ECL"). It is, however, recognized that the CWM Model City Transporter Rules and Regulations allow a measure of discretion to CWM in determining the sanctions to be imposed on any transporter.

CWM has represented that it currently does not either own or operate any hazardous waste transport vehicles. In the event that CWM owns or operates such vehicles at any future time, a failure of

these vehicles to comply with any of the above conditions shall constitute a violation of CWM's Part 373 permit to operate RMU-1 and hence a violation of the ECL.

It is also recognized that these conditions are almost identical to certain provisions in the CAC Agreement and that the parties to that Agreement intended that the terms of that Agreement may be amended from time to time as the situation warrants and the parties agree. Any changes in the corresponding provisions of the CAC Agreement shall result in an immediate corresponding change in the above-noted conditions. Since the same requirements are contained in the CAC Agreement, it is intended that the parties to the CAC Agreement, particularly the Towns of Lewiston and Porter and the County of Niagara, will be the principal parties responsible for the enforcement of these conditions and the resolution of any disputes concerning the implementation thereof.

(9/29/93)

SITING CONSIDERATIONS AVERAGE WEIGHTS AND SPECIAL CASE WEIGHT CHANGES

Siting Consideration	Facility Type					
	Average Weights	Landfill	Incinerator	Transfer/ Storage	Pits/ Ponds/ Lagoons	Treatment
Population Density	10					
Population Adjacent to Transport Route	7					
Risk of Accident in Transportation	10			+(2-4)		
Proximity to Incompatible Structures	3					
Utility Lines	1					
Municipal Effects	4					
Contamination of Ground and Surface Waters	18		-(2-3)		+(2-4)	-(2-3)
Water Supply Sources	8					
Fires and Explosions	11		+(2-4)			+(1-3)
Air Quality	12		+(4-6)		+(1-2)	
Areas of Mineral Exploitation	3	+(1)	+(1)	-(1)		-(1)
Preservation of Endangered, Threatened, and Indigenous Species	6					
Conservation of Historic and Cultural Resources	4					
Open Space, Recreational and Visual Impacts	3	+(1-2)	+(1-2)	-(1-2)	+(1-2)	-(1-2)

TOTAL SCORE = 100

TABLE I. SITING EVALUATION WORKSHEET

Siting Consideration	Criteria		% of Siting Consideration Weight	Rating 1, 2 or 3	Siting Criteria Scores	Sum of Criteria Score	Siting Consideration Weight	Siting Consideration Score
Population Density	Population within 0.5 miles of the site boundary	1a.	70	1	0.7	1.3	10	13
	The projected population and the rate of growth for the area within 0.5 miles of the site boundary during the 20 year period following initial site operation	b.	30	2	0.6			
Population Adjacent to Transport Route	Population for areas within 0.5 miles of anticipated transportation routes	2a.	70	3	2.1	3.0	7	21.0
	The projected population and the rate of growth for areas within 0.5 miles of the transport routes during the 20 year period following initial site operation	b.	30	3	.9			
Risk of Accident in Transportation	Mode of Transportation	3a.	10	3	.3	2.3	10	23.0
	Length of transport route	b.	15	2	.3			
	Accident rate of transport route	c.	20	1	.2			
	Structures within 0.5 miles of the transportation route	d.	10	3	.3			
	Transportation restrictions	e.	15	2	.3			
	Nature and volume of waste being transported	f.	30	3	.9			
Proximity to Incompatible Structures	Proximity to airports	4a.	50	1	.5	1.5	3	4.5
	Proximity to other incompatible structures	b.	50	2	1.0			

Siting Consideration	Criteria	% of Siting Consideration Weight	Rating 1, 2 or 3	Siting Criteria Scores	Sum of Criteria Score	Siting Consideration Weight	Siting Consideration Score
Utility Lines	Proximity to major utility lines	5. 100	2	2.0	2.0	1	2.0
Municipal Effects	Consistency with the intent of master land use plan	6a. 10	2	.2		4	
	Consistency with local laws, ordinances, rules and regulations	b. 10	1	.1			
	Public expense/revenue tradeoffs	c. 80	1	.8	1.1		4.4
Contamination of Ground and Surface Waters	Ground and surface water aspects	7a. 40	3	1.2		18	
	Runoff	b. 20	2	.4			
	Hydrogeological characteristics	c. 40	1	.4	2.0		36.0
Water Supply Sources	Relationship to water supply sources	8. 100	2	2.0	2.0	8	16.0
Fire and Explosions	Minimum distance	9a. 50	1	.5		11 adjusted down to 9	
	Fire Department and emergency medical services	b. 20	2	.4			
	Proximity to fire department and fire fighting water supply. A suitable water supply shall be as recommended by the NYS Department of State Office of Fire Prevention & Control	c. 30	2	.6	1.5		13.5
Air Quality	Atmospheric stability	10a. 20	2	.4		12	
	Prevailing wind direction	b. 50	3	1.5			
	Wind speed	c. 30	2	.6	2.5		30.0
Areas of Mineral Exploitation	Risk of subsidence	11. 100	1	1.0	1.0	3	3.0

Siting Consideration	Criteria	% of Siting Consideration Weight	Rating 1, 2 or 3	Siting Criteria Scores	Sum of Criteria Score	Siting Consideration Weight	Siting Consideration Score
Preservation of Endangered, Threatened and Indigenous Species	Developmental and operational impacts on endangered, threatened and indigenous species or critical habitat	12. 100	1	1.0	1.0	6	6.0
Conservation of Historic and Cultural Resources	Proximity to historical or cultural resources	13. 100	1	1.0	1.0	4	4.0
Open Space, Recreational and Visual Impacts	Proximity to open space and recreational resources	14a. 50	1	.5		3 adjusted up to 5	
	Relationship to scenic views or vistas	b. 30	1	.3			
	Degree to which proposed facilities are readily noticeable to passersby	c. 20	2	.4	1.2		6.0
					SCORE TOTAL		182.4

TABLE I. SITING EVALUATION WORKSHEET

Siting Consideration	Criteria		% of Siting Consideration Weight	Rating 1, 2 or 3	Siting Criteria Scores	Sum of Criteria Score	Siting Consideration Weight	Siting Consideration Score
Population Density	Population within 0.5 miles of the site boundary	1a.	70	3	2.1	3.0	10	30.0
	The projected population and the rate of growth for the area within 0.5 miles of the site boundary during the 20 year period following initial site operation	b.	30	3	.9			
Population Adjacent to Transport Route	Population for areas within 0.5 miles of anticipated transportation routes	2a.	70	3	2.1	3.0	7	21.0
	The projected population and the rate of growth for areas within 0.5 miles of the transport routes during the 20 year period following initial site operation	b.	30	3	.9			
Risk of Accident in Transportation	Mode of Transportation	3a.	10	3	.3	2.3	10	23.0
	Length of transport route	b.	15	2	.3			
	Accident rate of transport route	c.	20	1	.2			
	Structures within 0.5 miles of the transportation route	d.	10	3	.3			
	Transportation restrictions	e.	15	2	.3			
	Nature and volume of waste being transported	f.	30	3	.9			
Proximity to Incompatible Structures	Proximity to airports	4a.	50	1	.5	2.0	3	6.0
	Proximity to other incompatible structures	b.	50	3	1.5			

Siting Consideration	Criteria	% of Siting Consideration Weight	Rating 1, 2 or 3	Siting Criteria Scores	Sum of Criteria Score	Siting Consideration Weight	Siting Consideration Score
Utility Lines	Proximity to major utility lines	5. 100	2	2	2.0	1	2.0
Municipal Effects	Consistency with the intent of master land use plan	6a. 10	2	.2	1.1	4	4.4
	Consistency with local laws, ordinances, rules and regulations	b. 10	1	.1			
	Public expense/revenue tradeoffs	c. 80	1	.8			
Contamination of Ground and Surface Waters	Ground and surface water aspects	7a. 40	3	1.2	2.0	18	36.0
	Runoff	b. 20	2	.4			
	Hydrogeological characteristics	c. 40	1	.4			
Water Supply Sources	Relationship to water supply sources	8. 100	2	2	2.0	8	16.0
Fire and Explosions	Minimum distance	9a. 50	1	.5	1.5	9	13.5
	Fire Department and emergency medical services	b. 20	2	.4			
	Proximity to fire department and fire fighting water supply. A suitable water supply shall be as recommended by the NYS Department of State Office of Fire Prevention & Control	c. 30	2	.6			
Air Quality	Atmospheric stability	10a. 20	2	.4	2.5	12	30.0
	Prevailing wind direction	b. 50	3	1.5			
	Wind speed	c. 30	2	.6			
Areas of Mineral Exploitation	Risk of subsidence	11. 100	1	1	1	3	3.0

Siting Consideration	Criteria	% of Siting Consideration Weight	Rating 1, 2 or 3	Siting Criteria Scores	Sum of Criteria Score	Siting Consideration Weight	Siting Consideration Score
Preservation of Endangered, Threatened and Indigenous Species	Developmental and operational impacts on endangered, threatened and indigenous species or critical habitat	12. 100	1	1	1	6	6.0
Conservation of Historic and Cultural Resources	Proximity to historical or cultural resources	13. 100	1	1	1	4	4.0
Open Space, Recreational and Visual Impacts	Proximity to open space and recreational resources	14a. 50	1	.5	1.2	5	6.0
	Relationship to scenic views or vistas	b. 30	1	.3			
	Degree to which proposed facilities are readily noticeable to passersby	c. 20	2	.4			

SITING BOARD SCORE 200.9

ARCADIS

Appendix G

Agencies Wetland
Correspondence

WASTE MANAGEMENT

CWM CHEMICAL SERVICES, LLC
1550 Balmer Road
P.O. Box 200
Model City, NY 14107
(716) 754-8231
(716) 754-0211 Fax

November 18, 2003

Mr. Gary McDannell
U.S. Army Corps of Engineers
1776 Niagara Street
Buffalo, New York 14207-3199

Mr. Steven Doleski
NYS Department of Environmental Conservation
270 Michigan Avenue
Buffalo, New York 14203

Re: Section 404 Permit Application/Section 401 Water Quality Certification
Facility Upgrade Projects

Gentlemen:

CWM has developed plans for three separate upgrade projects at our Model City Facility. The first project involves construction of a new scales and scalehouse area near the main facility entrance for use in transmittal of shipping papers and weighing of incoming and outgoing transportation vehicles. This location will provide improved traffic patterns compared to the existing scales and scalehouse which are located in the central portion of the facility. The new scales and scalehouse are scheduled to be constructed this year.

The second project will construct a new Drum Management Building to provide container storage and consolidate several related site operations, such as the main laboratory, replacing the existing drum building which is over 20 years old. The new Drum Management Building is scheduled to be constructed during 2004. CWM will be submitting a request to modify its 6NYCRR Part 373 Permit for this project to the New York State Department of Environmental Conservation (NYSDEC) in a separate correspondence.

The third project is the construction of a new landfill, designated Residuals Management Unit No. 2 (RMU-2), and the relocation of several operating areas and buildings. RMU-2 will provide replacement land disposal capacity once the capacity of the existing active landfill at the site is exhausted. Construction for RMU-2 is anticipated to begin during 2005. Applications for state and federal permits required for RMU-2 were submitted by CWM on May 15, 2003, to the NYSDEC and United States Environmental Protection Agency (USEPA).

In order to determine the potential impacts to State and Federal wetlands within the areas impacted by these projects, CWM hired Environmental Design & Research, P.C. (EDR) to perform wetlands delineation. A report entitled "Wetland Delineation Report, Western Expansion Area", dated April 2003, was prepared by EDR and submitted on May 15, 2003, by CWM to the U. S. Army Corps of Engineers (ACOE) and the NYSDEC. EDR has determined that there are no NYSDEC regulated wetland impacts associated with these projects, but there are some potential Federal wetlands which could be considered jurisdictional waters of the United States by the ACOE. In a September 10, 2003, letter, the ACOE verified the Federal wetland boundaries, as shown on the wetlands delineation maps contained in the EDR report.

As specified in the EDR report, this project will impact existing Federal wetlands and existing man-made roadside ditches which exhibit wetland characteristics. The ditches have been constructed and operated as part of the facility's stormwater management system, as required by the NYSDEC. The ACOE has determined that these existing wetlands and roadside ditches are jurisdictional.

Mr. Gary McDannell
U.S. Army Corps of Engineers
Mr. Steven Doleski
NYSDEC
November 18, 2003
Re: Section 404 Permit Application/Section 401 Water Quality Certification
Facility Upgrade Projects

The following table summarizes the impacts associated with each of the three projects:

	Wetlands	Ditches	Total
Scales and Scalehouse Area	0.10 acres	0.05 acres	0.15 acres
Drum Management Building	0.18 acres	0.00 acres	0.18 acres
RMU-2 Project	0.38 acres	0.84 acres	1.22 acres
Total	0.66 acres	0.89 acres	1.55 acres

Attached please find a Joint Application for Permit, Form #95-19-3, which requests a Section 404 Permit from the ACOE for the total wetland and ditch impacts associated with the three projects. In addition, a Section 401 Water Quality Certification is being requested from the NYSDEC, if it is determined that one is required for these projects.

CWM proposes to mitigate the loss of the roadside ditches by constructing new, similarly designed and operated ditches near the existing ditch location as part of project construction. The new ditches will provide the same function and serve the same stormwater runoff control purpose as the existing ditches which are being replaced by the projects. Mitigation for the relatively minor Federal wetland impact caused by these projects can not be feasibly provided through creation of new replacement wetlands either onsite or offsite, as explained in the attached application. CWM proposes to provide mitigation through a donation in the amount of $30,000 to the Buffalo Audubon Society to assist in their efforts to establish a Birds of Prey Center in Niagara County. This environmentally beneficial project is anticipated to include various exhibits, bird enclosures, flight areas, native habitats, ponds, walking trails and educational elements. The amount of the proposed donation is consistent with a previous mitigation donation made by CWM for the Birds of Prey Center, adjusted for the relative amount of wetland impact (ref. April 28, 2003, letter, J. Knickerbocker to H. Adams).

CWM would greatly appreciate an expeditious review of the attached information and permit issuance to enable CWM to meet the project construction schedules stated above. It should be noted that CWM has already initiated the portion of construction for the scales and scalehouse project which impacts the man-made ditches based on verbal direction from the ACOE. All other wetlands and ditches have not yet been impacted.

If you have any questions or comments, please call Mr. John B. Hino at (716) 754-0278 or myself at (716) 754-0246.

Mr. Gary McDannell
U.S. Army Corps of Engineers
Mr. Steven Doleski
NYSDEC
November 18, 2003
Re: Section 404 Permit Application/Section 401 Water Quality Certification
Facility Upgrade Projects

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Sincerely,
CWM CHEMICAL SERVICES, LLC

Jill A. Knickerbocker

Jill A. Knickerbocker
Technical Manager
Model City Facility

JBH/JAK/jbh
Attachment

cc:	J. Dietz	- NYSDEC/Region 9	- W/O Attachment
	J. Strickland	- NYSDEC/Region 9	- W/O Attachment
	B. Rostami	- NYSDEC/Region 9	- W/Attachment
	E. Dassatti	- NYSDEC/Albany, NY	- W/Attachment
	J. Sacco	- NYSDEC/On-site Monitor	- W/O Attachment
	J. Reidy	- USEPA/Region II	- W/O Attachment
	J. Devald	- NCHD/Lockport, NY	- W/O Attachment
	R. Sturges	- CWM/Model City, NY	- W/O Attachment
	J. Hino	- CWM/Model City, NY	- W/Attachment
	S. Rydzyk	- CWM/Model City, NY	- W/O Attachment
	J. Hecklau	- EDR/Syracuse, NY	- W/O Attachment
	EMD Subject File		
	Q & A		

WASTE MANAGEMENT

CWM CHEMICAL SERVICES, LLC
1550 Balmer Road
Model City, NY 14107
(716) 286-1550
(716) 286-0211 Fax

July 6, 2009

Mr. Harold Keppner
U.S. Army Corps of Engineers
1776 Niagara Street
Buffalo, New York 14207-3199

Re: Request for Jurisdictional Determination

Dear Mr. Keppner:

On May 15, 2003, CWM Chemical Services, LLC, Model City Facility (CWM) submitted a wetlands delineation report to the U. S. Army Corps of Engineers, Buffalo District (Corps), for potential impacts associated with future construction of a new landfill, designated Residuals Management Unit No. 2 (RMU-2). At that time CWM also submitted a 6NYCRR Part 373 Permit Application to the New York State Department of Environmental Conservation (NYSDEC) which is still pending. Due to the anticipated timing of the NYSDEC review and subsequent projected construction schedule, the Corps temporarily suspended processing of the wetlands evaluation.

CWM has hired Environmental Design & Research, P.C. (EDR) to update the wetlands delineation to determine potential impacts to State and Federal wetlands associated with the RMU-2 project. The attached report entitled "Wetland Delineation Report, RMU-2 Landfill Expansion Area", dated June 2009, prepared by EDR, contains the results of this wetlands evaluation. The attached report replaces the 2003 report in its entirety. RMU-2 and associated project areas are situated within previously developed locations of the CWM Model City Facility. EDR has determined that there are no NYSDEC regulated wetlands associated with any of these project areas. The potential for impacts to Federally regulated wetlands consists of three man-made wastewater treatment ponds, man-made roadside ditches used for stormwater management and isolated pockets with minimal wetland function. As such, it is likely that there will be only minor impact to any jurisdictional Waters of the U. S.

CWM is anticipating that the NYSDEC review of the Part 373 Permit Application will be progressing over the next several months. Therefore, a resumption of the wetlands evaluation is appropriate at this time. CWM would greatly appreciate an expeditious review of the attached wetlands delineation report and issuance of a jurisdictional determination. CWM welcomes the opportunity to meet with the Corps and tour all of the project areas at your earliest convenience in order to facilitate the Corps' jurisdictional determination.

Please call Mr. John B. Hino at (716) 286-0278 or myself at (716) 286-0246 to schedule a site visit and if you have any questions or comments.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

Mr. Harold Keppner
U.S. Army Corps of Engineers
July 6, 2009
Re: Request for Jurisdictional Determination

Sincerely,
CWM CHEMICAL SERVICES, LLC

Jill A. Banaszak
Technical Manager
Model City Facility

JBH/JAB/jbh
Attachment

cc:	S. Doleski	- NYSDEC/Region 9	- W/O Attachment
	J. Dietz	- NYSDEC/Region 9	- W/O Attachment
	J. Strickland	- NYSDEC/Region 9	- W/O Attachment
	B. Rostami	- NYSDEC/Region 9	- W/Attachment
	R. Phaneuf	- NYSDEC/Albany, NY	- W/O Attachment
	M. Mortefolio	- NYSDEC/Albany, NY	- W/Attachment
	P. Kutlina	- NYSDEC/On-site Monitor	- W/Attachment
	J. Reidy	- USEPA/Region II	- W/O Attachment
	J. Devald	- NCHD/Lockport, NY	- W/Attachment
	M. Mahar	- CWM/Model City, NY	- W/O Attachment
	R. Zayatz	- CWM/Model City, NY	- W/O Attachment
	J. Hino	- CWM/Model City, NY	- W/Attachment
	S. Rydzyk	- CWM/Model City, NY	- W/O Attachment
	J. Hecklau	- EDR/Syracuse, NY	- W/O Attachment
	EMD Subject File		
	Q&A		

CWM CHEMICAL SERVICES, LLC
1550 Balmer Road
Model City, NY 14107
(716) 286-1550
(716) 286-0211 Fax

April 29, 2011

Ms. Kathleen Buckler
U.S. Army Corps of Engineers
1776 Niagara Street
Buffalo, New York 14207-3199

Re: Supplemental Request for Jurisdictional Determination

Dear Ms. Buckler:

On July 6, 2009, CWM Chemical Services, LLC, Model City Facility (CWM) submitted a wetlands delineation report to the U. S. Army Corps of Engineers, Buffalo District (Corps), for potential impacts associated with future construction of a new landfill, designated Residuals Management Unit No. 2 (RMU-2). The delineation report was submitted by CWM in anticipation of submittal of a revised 6NYCRR Part 373 Permit Application to the New York State Department of Environmental Conservation (NYSDEC), which was submitted on November 19, 2009. Based on the design submitted with the Part 373 Permit Application, an area proposed for development of RMU-2 was not previously delineated for wetlands in 2009.

CWM hired Environmental Design & Research, P.C. (EDR) to provide a supplemental wetlands delineation to determine potential impacts to wetlands associated with the RMU-2 project in the area that was not previously delineated. The attached is a supplement to the report entitled "Wetland Delineation Report, RMU-2 Landfill Expansion Area", dated June 2009, prepared by EDR, and contains the results of the supplemental wetlands evaluation. The attached supplemental report should be reviewed in conjunction with the June 2009 report.

CWM is anticipating that the NYSDEC review of the Part 373 Permit Application will be progressing over the next several months. Therefore, the wetlands evaluation is appropriate at this time. CWM would greatly appreciate an expeditious review of the wetlands delineation reports and issuance of a jurisdictional determination. CWM welcomes the opportunity to meet with the Corps and tour all of the project areas at your earliest convenience in order to facilitate the Corps' jurisdictional determination.

Please call Mr. Jonathan Rizzo at (716) 286-0354 or myself at (716) 286-0246 to schedule a site visit and if you have any questions or comments.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Ms. Kathleen Buckler
U.S. Army Corps of Engineers
April 29, 2011
Re: Supplemental Request for Jurisdictional Determination

Sincerely,
CWM CHEMICAL SERVICES, LLC

Jill A. Banaszak
Technical Manager
Model City Facility

JPR/JAB/jpr
Attachment

cc:

D. Denk	- NYSDEC/Region 9
D. Weiss	- NYSDEC/Region 9
B. Rostami	- NYSDEC/Region 9
M. Cruden	- NYSDEC/Albany, NY
T. Killeen	- NYSDEC/Albany, NY
M. Mortefolio	- NYSDEC/Albany, NY
H. Dudek	- NYSDEC/Albany, NY
G. Burke	- NYSDEC/Albany, NY
On-site Monitors	- NYSDEC/ Model City, NY
C. Stein	- USEPA/Region II
J. Devald	- NCHD/Lockport, NY
M. Mahar	- CWM/Model City, NY
R. Zayatz	- CWM/Model City, NY
J. Hino	- CWM/Model City, NY
S. Rydzyk	- CWM/Model City, NY
J. Hecklau	- EDR/Syracuse, NY
EMD Subject File	
Q & A	

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

September 13, 2011

REPLY TO
Regulatory Branch

SUBJECT: Department of the Army Application No. 2000-01534

Mr. James Pippin
Environmental Design & Research
274 North Goodman Street
Rochester, NY 14607

Dear Mr. Pippin:

This pertains to your proposal, on behalf of CWM Chemical Services, to potentially develop approximately 64 acres of land adjacent to Fourmile Creek, located on the CWM Model City facility, in the Town of Porter, Niagara County, New York.

Section 404 of the Clean Water Act establishes Corps of Engineers jurisdiction over the discharge of dredged or fill material into waters of the United States, including wetlands, as defined in 33 CFR Part 328.3.

I am hereby verifying the Federal wetland boundary as shown on the attached wetland delineation map dated June 2009. This verification was confirmed on November 17, 2010 and April 29, 2011 and will remain valid for a period of five (5) years from the date of this correspondence unless new information warrants revision of the delineation before the expiration. At the end of this period, a new wetland delineation will be required if a project has not been completed on this property and additional impacts are proposed for waters of the United States. Further, this delineation/determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. This delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resource Conservation Service prior to starting work.

Based upon my review of the submitted delineation and on-site observations, I have determined that wetland areas A, B, C, D, G, H, I, J, K, KX, M, N, and O on the subject parcel are part of a surface water tributary system to a navigable water of the United States as noted on the attached Jurisdictional Determination form. Therefore, the wetlands are regulated under Section 404 of the Clean Water Act. Department of the Army authorization is required if you propose a discharge of dredged or fill material in these areas.

In addition, I have determined that there is no clear surface water connection or ecological continuum between **wetland areas L, P, and Q** on the parcel and a surface tributary system to a navigable water of the United States. Therefore, these waters are considered isolated, non-navigable, intrastate waters and not regulated under Section 404 of the Clean Water

Act. Accordingly, you do not need Department of the Army authorization to commence work in these areas.

I encourage you to contact the appropriate state and local governmental officials to ensure that the proposed work complies with their requirements.

Finally, this letter contains an approved jurisdictional determination for the subject parcel. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal the above determination, you must submit a completed RFA form within 60 days of the date on this letter to the Great Lakes/Ohio River Division Office at the following address:

Ms. Pauline Thorndike
Review Officer
Great Lakes and Ohio River Division
CELRD-PDS-O
550 Main Street, Room 10032
Cincinnati, OH 45202-3222
Phone: 513-684-6212

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **November 14, 2011**.

It is not necessary to submit an RFA to the Division office if you do not object to the determination in this letter.

A copy of this correspondence without enclosures has been forwarded to Mr. Jonathan Rizzo – CWM permitting manager.

Questions pertaining to this matter should be directed to me by calling (716) 879-4303, by writing to the following address: U.S. Army Corps of Engineers, 1776 Niagara Street, Buffalo, New York 14207, or by e-mail at: kathleen.a.buckler@usace.army.mil

Sincerely,

Kathleen Buckler
Biologist

Enclosures

WASTE MANAGEMENT

CWM CHEMICAL SERVICES, LLC
1550 Balmer Road
Model City, NY 14107
(716) 286-1550
(716) 286-0211 Fax

October 15, 2012

Mr. Charles Rosenburg
New York State Department of
Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

Re: Request for Letter of Non-Jurisdiction

Dear Mr. Rosenburg:

On July 6, 2009, CWM Chemical Services, LLC, Model City Facility (CWM) submitted a wetlands delineation report prepared by Environmental Design & Research, P.C. (EDR) to the U. S. Army Corps of Engineers, Buffalo District (Corps), for potential impacts associated with future construction of a new landfill, designated Residuals Management Unit No. 2 (RMU-2). The delineation report entitled "Wetland Delineation Report, RMU-2 Landfill Expansion Area", dated June 2009 was submitted by CWM in anticipation of submittal of a revised 6NYCRR Part 373 Permit Application to the New York State Department of Environmental Conservation (NYSDEC), which was submitted on November 19, 2009.

On April 29, 2011, CWM submitted a supplemental wetlands delineation to determine potential impacts to wetlands associated with the RMU-2 project in an area that was not previously delineated. As indicated in the wetland delineation report and supplemental report for RMU-2, no NYSDEC regulated wetlands are located within the project area. Additionally, the project area is not located within a 100-foot adjacent area to any NYSDEC regulated wetland.

On September 13, 2011, the Corps issued a notice of jurisdictional determination indicating that there are wetlands in the project area that are regulated under Section 404 of the Clean Water Act. CWM is currently preparing a Section 401 and 404 Joint Application which will include a draft mitigation plan for submittal to the Corps and the NYSDEC for federally regulated wetlands within the project area.

Subsequently, on August 29, 2012, CWM received comments from the NYSDEC via email pertaining to the Draft Environmental Impact Statement (DEIS) for the RMU-2 project. The DEIS, dated April 2003 (revised August 2009 and March 2012), was submitted in accordance with 6 NYCRR Part 617 regulations. The August 29, 2012 NYSDEC email contained the following comment pertaining to wetlands: "*.....the lack of state jurisdiction should be confirmed and a letter of non-jurisdiction from NYSDEC should be requested and obtained.*" By this letter, CWM is requesting a letter of non-jurisdiction from the NYSDEC. The NYSDEC, both Region 9 and Central Office, were previously provided copies of the report entitled "Wetland Delineation Report, RMU-2 Landfill Expansion Area", dated June 2009 and the supplemental wetlands evaluation report, dated April 2011, prepared by EDR.

Mr. Charles Rosenburg
NYSDEC
October 15, 2012
Re: Request for Letter of Non-Jurisdiction

CWM would greatly appreciate an expeditious review of the wetlands delineation reports and issuance of a non-jurisdictional determination. CWM welcomes the opportunity to discuss this matter with a NYSDEC wetlands specialist and/or tour the project areas at your earliest convenience in order to facilitate the NYSDEC non-jurisdictional determination.

Please call Mr. Jonathan Rizzo at (716) 286-0354 or myself at (716) 286-0246 to schedule a site visit and if you have any questions or comments.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,
CWM CHEMICAL SERVICES, LLC

Jill A. Banaszak
Technical Manager
Model City Facility

JPR/JAB/jpr
Attachment

cc:
D. Denk	- NYSDEC/Region 9
D. Weiss	- NYSDEC/Region 9
B. Rostami	- NYSDEC/Region 9
M. Cruden	- NYSDEC/Albany, NY
T. Killeen	- NYSDEC/Albany, NY
M. Mortefolio	- NYSDEC/Albany, NY
G. Burke	- NYSDEC/Albany, NY
On-site Monitors	- NYSDEC/ Model City, NY
P. Flax	- USEPA/Region II
J. Devald	- NCHD/Lockport, NY
M. Mahar	- CWM/Model City, NY
R. Zayatz	- CWM/Model City, NY
S. Rydzyk	- CWM/Model City, NY
J. Hecklau	- EDR/Syracuse, NY
EMD Subject File	
Q & A	

WASTE MANAGEMENT

CWM CHEMICAL SERVICES, LLC
1550 Balmer Road
Model City, NY 14107
(716) 286-1550
(716) 286-0211 Fax

November 7, 2012

Mr. Charles Rosenburg
New York State Department of
Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203-2999

Re: Supplemental Delineation Proposed Drum Management Building Area

Dear Mr. Rosenburg:

On October 15, 2012, CWM Chemical Services, LLC, Model City Facility (CWM) submitted a request for a determination of non-jurisdiction for potential impacts associated with future construction of a new landfill, designated Residuals Management Unit No. 2 (RMU-2).

During the design process for the new Drum Management Building Environmental Design & Research, P.C. (EDR) performed a supplemental wetlands delineation in the area. Attached please find a Supplemental Wetland Delineation Report prepared by EDR, dated July 21, 2012 to assist you with your determination.

Please call Mr. Jonathan Rizzo at (716) 286-0354 or myself at (716) 286-0246 if you have any questions or comments.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,
CWM CHEMICAL SERVICES, LLC

Jill A. Banaszak
Technical Manager
Model City Facility

JPR/JAB/jpr
Attachment

Mr. Charles Rosenburg
NYSDEC
November 7, 2012
Re: Supplemental Delineation Proposed Drum Management Building Area

cc:

D. Denk	- NYSDEC/Region 9
D. Weiss	- NYSDEC/Region 9
B. Rostami	- NYSDEC/Region 9
M. Cruden	- NYSDEC/Albany, NY
T. Killeen	- NYSDEC/Albany, NY
M. Mortefolio	- NYSDEC/Albany, NY
G. Burke	- NYSDEC/Albany, NY
On-site Monitors	- NYSDEC/ Model City, NY
P. Flax	- USEPA/Region II
J. Devald	- NCHD/Lockport, NY
K. Buckler	- USACE/Buffalo, NY
M. Mahar	- CWM/Model City, NY
R. Zayatz	- CWM/Model City, NY
S. Rydzyk	- CWM/Model City, NY
J. Hecklau	- EDR/Syracuse, NY
EMD Subject File	
Q & A	

WASTE MANAGEMENT

CWM CHEMICAL SERVICES, LLC
1550 Balmer Road
Model City, NY 14107
(716) 286-1550
(716) 286-0211 Fax

November 7, 2012

Ms. Kathleen Buckler
U.S. Army Corps of Engineers
1776 Niagara Street
Buffalo, New York 14207-3199

Re: Supplemental Wetland Delineation

Dear Ms. Buckler:

On July 6, 2009, CWM Chemical Services, LLC, Model City Facility (CWM) submitted a wetlands delineation report prepared by Environmental Design & Research, P.C. (EDR) to the U. S. Army Corps of Engineers, Buffalo District (Corps), for potential impacts associated with future construction of a new landfill, designated Residuals Management Unit No. 2 (RMU-2). The delineation report entitled "Wetland Delineation Report, RMU-2 Landfill Expansion Area", dated June 2009 was submitted by CWM in anticipation of submittal of a revised 6NYCRR Part 373 Permit Application to the New York State Department of Environmental Conservation (NYSDEC), which was submitted on November 19, 2009.

On April 29, 2011, CWM submitted a supplemental wetlands delineation to determine potential impacts to wetlands associated with the RMU-2 project in an area that was not previously delineated. On September 13, 2011, the Corps issued a notice of jurisdictional determination indicating that there are wetlands in the project area that are regulated under Section 404 of the Clean Water Act. CWM is currently preparing a Section 401 and 404 Joint Application which will include a draft mitigation plan for submittal to the Corps and the NYSDEC for federally regulated wetlands within the project area.

Subsequent to the Corps jurisdictional determination CWM continued with the preparation of the design for RMU-2 and a proposed new Drum Management Building. During the continuing preparation of the design, CWM identified a small portion of an intermittent drainage channel (Wetland M in Project Area 4) that was not included in the Corps September 13, 2011 jurisdictional determination. Additionally, the area of disturbance of the new Drum Management Building (Project Area 1) may be larger than shown on the June 2009 Wetland Delineation Report. Therefore, a supplemental wetlands delineation was performed by EDR in July 2012 to include the additional drainage channel (Wetland M) and a forested area north of the proposed new Drum Management Building location.

CWM anticipates that the additional drainage channel (Wetland M) will be within the area of disturbance for development of RMU-2. CWM also anticipates that the area of disturbance for the new Drum Management Building will be within the open field area of Project Area 1 and will not impact the forested wetlands identified to the north of the development area.

Attached please find a Supplemental Wetland Delineation Report for federal wetland M and the new Drum Management Building area for your review. Please advice CWM if the Corps will

require further information.

Please call Mr. Jonathan Rizzo at (716) 286-0354 or myself at (716) 286-0246 if you have any questions or comments.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Sincerely,
CWM CHEMICAL SERVICES, LLC

Jill A. Banaszak
Technical Manager
Model City Facility

JPR/JAB/jpr
Attachment

cc:

D. Denk	- NYSDEC/Region 9
D. Weiss	- NYSDEC/Region 9
B. Rostami	- NYSDEC/Region 9
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EMD Subject File	
Q & A	

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources, Region 9
270 Michigan Avenue, Buffalo, New York, 14203-2915
Phone: (716) 851-7010 • **FAX:** (716) 851-7053
Website: www.dec.ny.gov

Joe Martens
Commissioner

November 28, 2012

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Jonathan P. Rizzo, Permitting Manager
Waste Management
1550 Balmer Road
Model City, New York 14107

Dear Mr. Rizzo:

Wetland RV-8
Boundary Delineation
Town of Porter, Niagara County

This letter serves as notification that I verified the wetland delineation conducted by EDR Companies (EDR) of Wetland RV-8 within the proposed Chemical Waste Management landfill expansion area, parcel 61.00-2-1, on November 6, 2012. The wetland boundary is identified with pink plastic flagging consecutively numbered DRUM 1 through DRUM 33 and C1 through C5 as shown on EDR's Figure 8 "Revised Delineated Wetlands", as well as the enclosed map. Please note that Wetland C has a direct connection to the main body of Wetland RV-8 and is therefore state jurisdictional but Wetlands A, B, and D are not state jurisdictional. Also, please beware that wetland boundaries may change over time and this map does not fix the wetland boundary indefinitely.

If you would like to document the precise boundary of the wetland relative to your property boundary, it is your responsibility to have the wetland boundary surveyed. If you choose to complete a survey, the wetland boundary survey map should be submitted to me for verification. A copy of this Department's Requirements for Wetland Survey and Mapping is enclosed. Please note that a surveyed wetland boundary that has been verified by this Department will be considered valid for five years.

In 1975, the New York State Legislature passed the Freshwater Wetlands Act to preserve and protect wetlands and their functions, such as flood protection and fish and wildlife habitat. The New York State Department of Environmental Conservation is required to map all wetlands protected by this law, and to make those maps available for inspection in all local government clerks' offices. Certain activities within the wetland or its regulated 100-foot adjacent area require a permit from this Department, including but not limited to filling, clearing vegetation, draining, and construction. Contact our Division of Environmental Permits for information regarding permit requirements at:

New York State Department of Environmental Conservation
Division of Environmental Permits
270 Michigan Avenue
Buffalo, New York 14203-2915
Telephone: (716) 851-7165

Please be advised that this Department plans to amend the Freshwater Wetlands Map for Niagara County to better illustrate the boundary of Wetland RV-8 based on this wetland delineation. We will publish notice of the proposed amendment in the Department's Environmental Notice Bulletin and in two local newspapers on a later date. In addition, all affected landowners will be notified by certified mail. Affected landowners, local government officials, and other interested parties may comment to this Department on the proposed map amendment now or at the time of the published notices.

In addition, the U.S. Army Corps of Engineers may also have wetland jurisdiction irrespective of the Department of Environmental Conservation. For more information, you may contact the Corps at:

United States Army Corps of Engineers Regulatory Branch
1776 Niagara Street
Buffalo, New York 14207
Telephone: (716) 879-4330

If you have any questions about this wetland delineation, please feel free to call me in the Buffalo office at (716) 851-7010.

Sincerely,

Charles P. Rosenburg

Charles P. Rosenburg
Senior Ecologist
Region 9

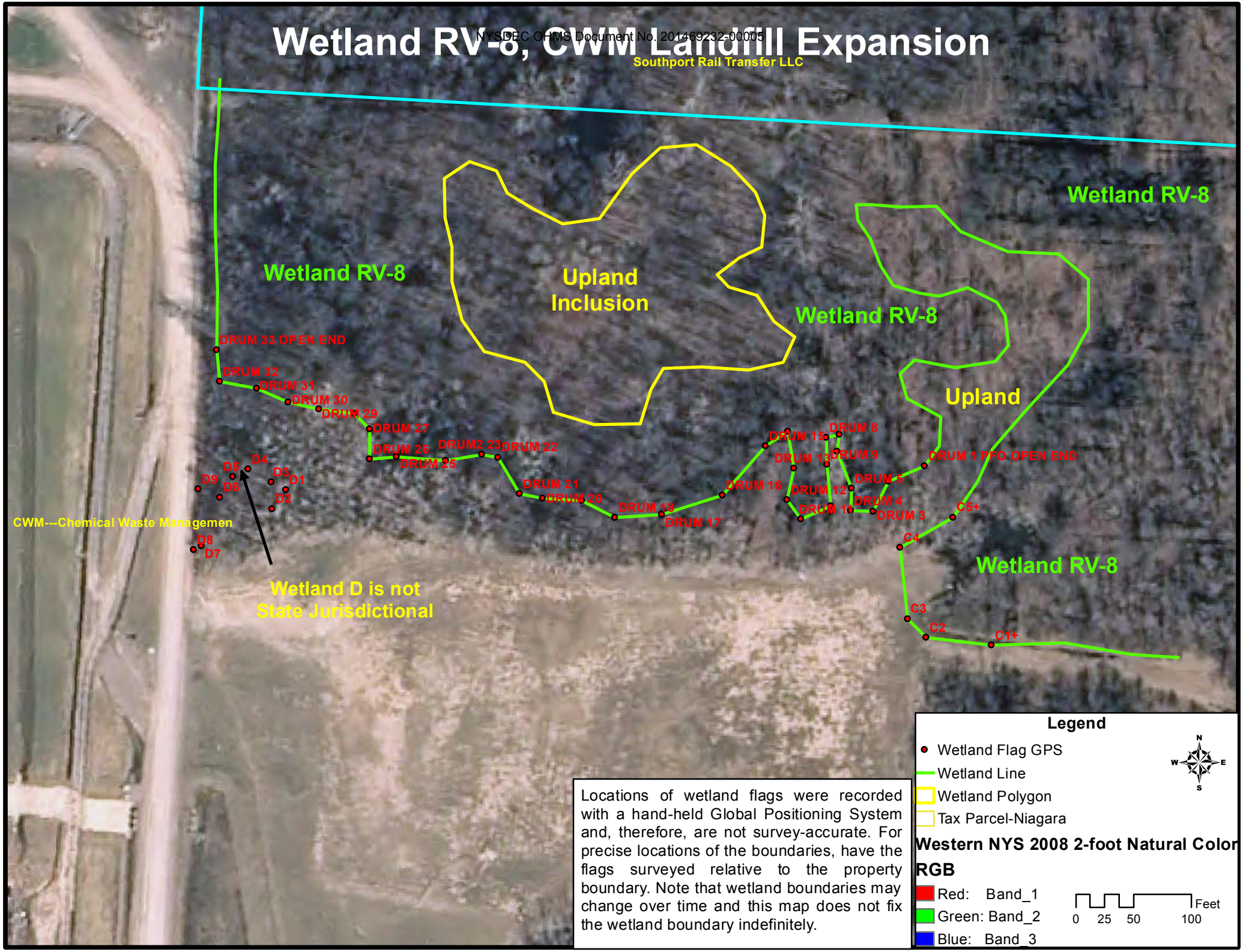
CPR/jmm

Enclosures: Wetland RV-8 Delineation Map, NYSDEC Region 9 Survey Requirements

cc: Mr. Mark Kandel, NYSDEC, Regional Wildlife Manager
Lt. James R Schultz, NYSDEC Division of Law Enforcement
Mr. Jim Pippin, EDR Companies
Porter Town Clerk
Porter Town Supervisor
Niagara County Clerk
Niagara County Executive
Wetland RV-8 file

Wetland RV-8, CWM Landfill Expansion

Southport Rail Transfer LLC



Locations of wetland flags were recorded with a hand-held Global Positioning System and, therefore, are not survey-accurate. For precise locations of the boundaries, have the flags surveyed relative to the property boundary. Note that wetland boundaries may change over time and this map does not fix the wetland boundary indefinitely.

Legend

- Wetland Flag GPS
- Wetland Line
- Wetland Polygon
- Tax Parcel-Niagara

Western NYS 2008 2-foot Natural Color RGB

- Red: Band_1
- Green: Band_2
- Blue: Band_3

0 25 50 100 Feet

New York State Department of Environmental Conservation
Division of Fish, Wildlife and Marine Resources, Region 9
270 Michigan Avenue, Buffalo, New York, 14203-2915
Phone: (716) 851-7010 • **FAX:** (716) 851-7053
Website: www.dec.ny.gov

Joe Martens
Commissioner

February 4, 2013

Mr. Jonathan P. Rizzo, Permitting Manager
Waste Management
1550 Balmer Road
Model City, New York 14107

Dear Mr. Rizzo:

Freshwater Wetlands Jurisdiction
CWM Residuals Management Unit No. 2
Town of Porter, Niagara County

This letter serves as a supplement to the November 28, 2012 letter I sent to you regarding delineation of the Freshwater Wetland RV-8 boundary within the CWM Residuals Management Unit No. 2 (RMU-2). That letter did not specifically address New York State Department of Environmental Conservation (NYSDEC) freshwater wetlands jurisdiction elsewhere within the RMU-2. Please note that I concur with EDR's assessment that there are no other areas of NYSDEC freshwater wetlands jurisdiction within the RMU-2 development area.

If you have any additional questions about NYSDEC freshwater wetlands jurisdiction, please feel free to call me in the Buffalo office at (716) 851-7010.

Sincerely,

Charles P. Rosenburg

Charles P. Rosenburg
Senior Ecologist
Region 9

CPR/jmm

cc: Ms. Lisa Porter, NYSDEC Division of Environmental Permits
Mr. Jim Pippin, EDR Companies
Wetland RV-8 file