APPENDIX D

DIVERSION ACCOUNTING UPDATE FOR THE

NEW 25-GAGE PRECIPITATION NETWORK

Diversion Accounting Update for the New 25-Gage Precipitation Network

October 1993

Prepared for:
U.S. Army Corps of Engineers
Chicago District

Prepared by:
RUST Environment & Infrastructure
111 North Canal Street, Suite 305
Chicago, IL 60606

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

This report describes revisions and updates to portions of the computer model inputs used in the Lake Michigan diversion accounting program of the U.S. Army Corps of Engineers, Chicago District. The primary purpose of the revisions is to implement a new 25-gage precipitation network in the diversion accounting analysis. Assignment of gage data to land areas is interconnected with land cover assignments used in the analysis. Because it would be necessary to recalculate land cover assignments to determine precipitation gage assignments, the project also includes a complete update of land cover assignments.

Major elements of the project were the following:

- Review and correction of the Computer Aided Drafting (CAD) mapping system used in diversion accounting
- Delineation of precipitation gage area assignments for the 25-gage network
- Manual land use delineation
- Calculation of land cover
- Revision of computer model inputs to reflect the updates

The above tasks formed the major work effort of the project. Deliverable results of this effort included updated CAD mapping computer files, 1" = 400' scale land use maps for the study region, and the revised computer model input files.

There were additional tasks included in the project not related to the land cover/gage delineation work. These tasks included the following items:

- Review of model parameters used in the hydrologic models
- Preliminary delineation of separate sewer areas in the Calumet facility planning area

The results of these additional tasks are presented in technical memoranda which are included as attachments to this report.

Study Area and Background

The diversion accounting program of the U.S. Army Corps of Engineers is an analysis procedure used to determine the annual volume of flow diversion from the Lake Michigan watershed to the Illinois River watershed. The overall program is extremely complex, and this report does not attempt to provide a complete explanation of the procedure. However, a simplified, partial explanation follows to provide sufficient background information for interpretation of this report.

Water is transferred from the Lake Michigan watershed to the Illinois River system by several mechanisms. The largest contribution is due to reversal of the flow direction in 1900 of the Chicago River and construction of a canal outlet from the Chicago River to the Des Plaines River, a tributary of the Illinois River. As a result, 673 square miles of land formerly tributary to Lake Michigan drains to the Illinois River system. This diverted watershed is shown in Figure 1.

The focus of this project is the combined sewer areas serviced by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC). The MWRDGC facility planning areas (FPA) are also outlined in Figure 1. The study area for this project covers most of the North, Central and Calumet FPAs. In about 80 percent of these planning areas, combined sewers collect both stormwater and sanitary sewage and convey the flow to MWRDGC treatment plants. After treatment, the water is discharged to the reversed Chicago River system. The sanitary sewage portions of the treatment plant discharges also contribute to the diversion because the potable water supply is pumped from Lake Michigan. This pumping is the second major component of the diversion. However, MWRDGC service boundaries extend beyond the boundary of the diverted Lake Michigan watershed. Therefore, not all stormwater discharges from the treatment plants are part of the diversion.

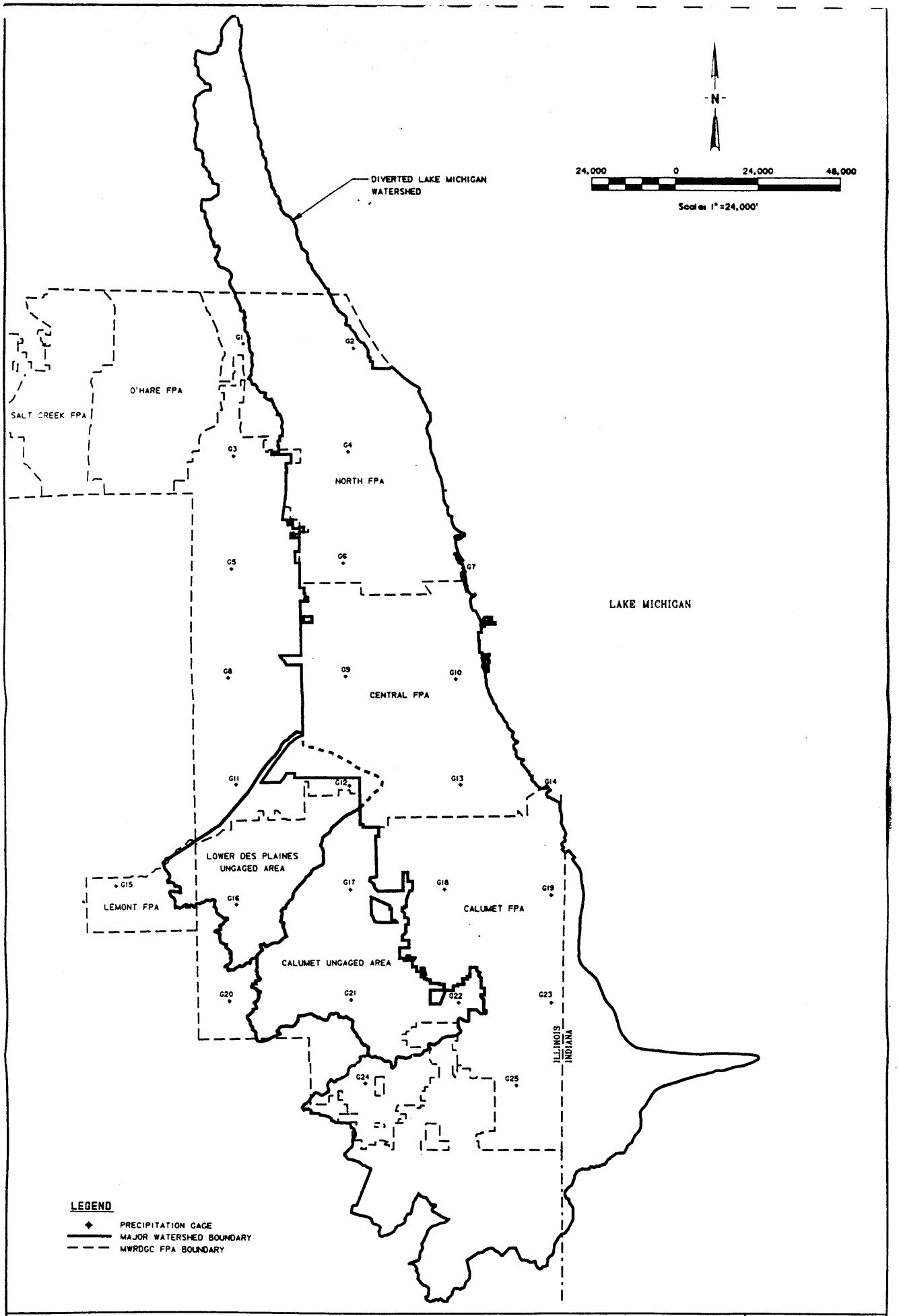

FIGURE 1

DIVERSION ACCOUNTING MAJOR WATERSHEDS AND MWRDGC PLANNING AREA BOUNDARIES
DIVERSION ACCOUNTING UPDATE FOR THE NEW 25-GAGE PRECIPITATION NETWORK
US ARMY CORPS OF ENGINEERS CHICAGO, ILLINOIS

RUST ENVIRONMENT & INFRASTRUCTURE

The Corps of Engineers, Chicago District has developed a hydrologic and hydraulic computer modeling strategy to track stormwater and sanitary sewage discharges through the MWRDGC system. The strategy is used to determine the portion of treatment plant discharges and flows at certain stream gages that is attributable to the Lake Michigan diversion. The project described in this report deals with updates to the hydrologic and hydraulic models of specific portions of the MWRDGC sewer system and local systems connected to it. It must be stressed that this is just one component of the overall diversion accounting procedure.

Topics Covered in this Report

This report presents computations of impervious and pervious areas for over three hundred watershed subdivisions. These subdivisions are the result of portioning subbasins according to a new gage delineation also completed for this project. A key tool in the land cover/gage delineation analysis is the computer mapping system used in diversion accounting which is introduced in the following section. Next, the basic watershed units, the special contributing areas (SCA), are described. This is followed by report sections describing the delineation of precipitation gage areas and the land cover analysis. Finally, the report presents procedures for revising the computer model input files.

The report includes six appendices. Appendix A is an index to the computer mapping system. Appendices B through G contain interim and final data associated with the land cover computations. Additional project deliverables that accompany the report are the following.

- Revised CAD mapping on disk
- Land cover database on disk
- SCA database on disk
- 161 1" = 400' scale aerial photo maps with overlays showing land use delineations
- Updated HSPF and SCALP computer model data files on disk

PROJECT MAPPING

The contributing watersheds have been digitized into a computer format map. The Corps provided the mapping in AutoCAD which was converted to Intergraph Microstation format by the contractor during the project. New and revised map layers were delivered to the Corps in both formats.

The base layer of the mapping appears to be of USGS origin. The imbedded coordinate system is the Universal Transverse Mercator (UTM) grid coordinates, zone 16. The UTM System is metric and grid distances on the drawings are expressed in meters. Layers showing water courses, railroads and airports appear to have been part of the original base map. The base mapping is useful for identifying physical locations and for lining up the mapping with other maps such as USGS quadrangles. However, the base mapping has no function in diversion accounting.

Important subarea delineations have been incorporated into the digital maps. These are as follows.

- The diverted Lake Michigan Watershed
- 214 Special Contributing Areas (SCA)
- 2 "Ungaged" Watersheds:
  - Lower Des Plaines River
  - Calumet River
- 7 MWRDGC Facility Planning Areas (FPA)
- The MWRDGC Poplar Creek Service Area

The focus of the present study is on the SCA's and ungaged watersheds. The MWRDGC FPA boundaries are really legal delineations rather than watershed boundaries because MWRDGC collection facilities occasionally carry flow across their FPA boundaries.

The digital maps also contain numerous features of the MWRDGC collection system, including interceptor sewers, TARP tunnels, connecting structures, drop shafts, pumping

stations and sewage treatment plants. These features were digitized previously and not used or modified in the present study. An index to Intergraph format drawing levels and AutoCAD format drawing layers is provided in Appendix A.

SPECIAL CONTRIBUTING AREAS (SCA)

The SCA's are sewered watersheds that drain to the MWRDGC TARP system either at present or in the future. The SCA's are virtually all combined sewer areas, but a few SCA's in the Calumet area are served by separate sanitary sewers and storm sewers. There are 214 SCA's that have been delineated. They are grouped according to the portion of the TARP system to which they drain or will drain when the system is complete. Each group is identified by a one or two letter prefix as follows.

- CA - Calumet
- DP - Des Plaines
- M - Mainstream
- MN - Mainstream, North Leg
- O - O'Hare

The SCA's in the O'Hare group are not addressed in this analysis.

The function of TARP is to capture the part of storm runoff events which overload the combined sewer system. If an event is large enough to fill the available storage in the TARP system, then excess flow discharges to area rivers and streams through combined sewer overflows. The diversion accounting program employs hydrologic and hydraulic models to track runoff and determine the runoff portions that flow directly to the treatment plants, indirectly to the treatment plants via TARP, or are discharged to the rivers as overflows. Both the source location and ultimate fate of the runoff are important in the computations.

The diversion accounting program uses the HSPF hydrologic model to estimate watershed runoff and the SCALP model to perform initial hydraulic computations. The HSPF model

calculates storm runoff per unit area on an hourly basis. Contributing areas and baseflows are defined in the SCALP models. Total flows are routed through the lateral, submain and main sewer systems using SCALP. SCALP also determines the hourly flow to the treatment facility and the quantity that becomes overflow. Subsequent modeling of the TARP system identifies the portion of the overflow that is diverted to TARP for later treatment and the portion that is discharged to area waterways.

Thus, a major input in the treatment plant/TARP/overflow modeling is the definition and delineation of the SCAs. The study described in this report included a detailed review of SCA delineations and development of a database that provides pertinent information about each SCA. A map showing the SCA delineations is provided in Figure 2 which can be found after the appendices at the end of this report. This map indicates the identifying designation of each SCA and the area of the SCA in acres. The SCA designation consists of two parts: a prefix identifying the TARP branch to which the SCA drains and an identification number. Letters A and B have been used to indicate SCA's that were formerly a single SCA and have since been divided.

A review database of SCA characteristics is provided in Table 1. This table lists the SCA identifier and the surface area of each SCA. The map area was determined digitally using the CAD software. The model area indicates the area that was entered in SCALP model inputs for WY 1989 submitted to the contractor by the Corps. Differences between the map and WY 1989 model are noted, with differences exceeding 5 percent highlighted. Correction of SCA areas to agree with "map areas" is among the revisions to SCALP inputs completed in this project. Table 1 also identifies whether the SCA is served by separate or combined sanitary sewers. Four separate sewer areas in Calumet are not mapped in the CAD system, and there is no map area shown. Table 1 also gives the file name where the SCALP input for each SCA resides.

TABLE 1

REVIEW LISTING OF SCA'S, SEWER SYSTEMS AND INPUT FILES

SUBBASIN ID #		MAP AREA acres	MAP AREA sq. miles	MODEL AREA sq. miles	DIFFERENCE sq. miles	PERCENT DIFFERENCE	SEWER SYSTEM	SCALP FILE	COMMENTS
CA	2	718	1.122	1.122	–	–	COMB.	CAL-LM	
CA	4			3.080			SEP.	CAL-LMDP	
CA	5	201	0.314	0.314	–	–	COMB.	CAL-LM	
CA	6	681	1.064	1.064	–	–	COMB.	CAL-LM	
CA	7	741	1.158	1.158	–	–	COMB.	CAL-LM	
CA	7 M	659	1.030	1.030	–	–	COMB.	CAL-LM	Former CA(C-7M)
CA	7 Q	4063	6.348	6.348	–	–	COMB.	CAL-LM	Former CA(C-7Q)
CA	7 V	847	1.323	1.323	–	–	COMB.	CAL-LM	Former CA(C-7V)
CA	7 W	2497	3.902	3.902	–	–	COMB.	CAL-LM	Former CA(C-7W)
CA	8	747	1.167	1.167	–	–	COMB.	CAL-LM	
CA	9	203	0.317	0.317	–	–	COMB.	CAL-LM	
CA	10	5439	8.498	8.498	–	–	COMB.	CAL-LM	
CA	11 A	567	0.886	0.886	–	–	COMB.	CAL-LM	
CA	11 B	844	1.319	1.319	–	–	COMB.	CAL-LM	
CA	12	2622	4.097	4.097	–	–	COMB.	CAL-LM	
CA	13	3726	5.822	5.822	–	–	COMB.	CAL-LM	
CA	14	187	0.292	0.292	–	–	COMB.	CAL-LM	
CA	15 A	960	1.500	1.500	–	–	COMB.	CAL-LM	Former 15-1
CA	15 B	79	0.123	0.123	–	–	COMB.	CAL-LM	Former 15-2
CA	16	227	0.355	0.355	–	–	COMB.	CAL-LM	
CA	17	527	0.823	0.823	–	–	COMB.	CAL-LM	
CA	18	1062	1.659	1.659	–	–	COMB.	CAL-LM	
CA	18 E-A	3948	6.169	6.169	–	–	COMB.	CAL-LM	
CA	18 E-B	786	1.228	1.228	–	–	COMB.	CAL-LM	
CA	19	1267	1.980	1.980	–	–	COMB.	CAL-LM	
CA	20	249	0.389	0.389	–	–	COMB.	CAL-LM	
CA	21	636	0.994	0.994	–	–	COMB.	CAL-LM	
CA	22	671	1.048	1.048	–	–	COMB.	CAL-LM	
CA	23	603	0.942	0.942	–	–	COMB.	CAL-LM	
CA	24	1453	2.270	2.270	–	–	COMB.	CAL-LM	
CA	25	312	0.488	0.488	–	–	COMB.	CAL-LM	
CA	26	586	0.916	0.916	–	–	COMB.	CAL-LM	
CA	27	390	0.609	0.609	–	–	COMB.	CAL-LM	
CA	28	1329	2.077	2.077	–	–	COMB.	CAL-LM	
CA	29	802	1.253	1.253	–	–	COMB.	CAL-LM	
CA	30	766	1.197	1.197	–	–	COMB.	CAL-LM	
CA	31	947	1.480	1.480	–	–	COMB.	CAL-LM	
CA	32	860	1.344	1.344	–	–	COMB.	CAL-LM	
CA	33	112	0.175	0.175	–	–	COMB.	CAL-LM	33A in Model
CA	34 A	1590	2.484	2.484	–	–	COMB.	CAL-LM	
CA	34 B	100	0.156	0.156	–	–	COMB.	CAL-LM	
CA	36	141	0.220	0.220	–	–	COMB.	CAL-LM	
CA	38	950	1.484	1.484	–	–	COMB.	CAL-LM	
CA	39	896	1.400	1.400	–	–	COMB.	CAL-LM	
CA	40	1207	1.886	1.886	–	–	COMB.	CAL-LM	
CA	41	465	0.727	0.727	–	–	COMB.	CAL-LM	
CA	42 A	680	1.063	1.063	–	–	COMB.	CAL-LM	
CA	42 B	576	0.900	0.900	–	–	COMB.	CAL-LM	
CA	43 A	26	0.041	0.041	–	–	COMB.	CAL-LM	Former 43-1
CA	43 B	44	0.069	0.069	–	–	COMB.	CAL-LM	Former 43-2
CA	44	70	0.109	0.109	–	–	COMB.	CAL-LM	
CA	45	157	0.245	0.245	–	–	COMB.	CAL-LM	
CA	46	343	0.536	0.536	–	–	COMB.	CAL-LM	
CA	47	54	0.084	0.084	–	–	COMB.	CAL-LM	
CA	48	349	0.545	0.545	–	–	COMB.	CAL-LM	
CA	49	267	0.417	0.417	–	–	COMB.	CAL-LM	
CA	50	131	0.205	0.205	–	–	COMB.	CAL-LM	
CA	51	1008	1.575	1.575	–	–	COMB.	CAL-LM	
CA	52			5.560			SEP.	CAL-LMDP	
CA	53	73	0.114	0.114	–	–	COMB.	CAL-LM	
CA	54	105	0.164	0.164	–	–	COMB.	CAL-LM	
CA	55	182	0.284	0.284	–	–	COMB.	CAL-LM	
CA	56	2094	3.272	3.272	–	–	COMB.	CAL-LM	
CA	57	324	0.506	0.506	–	–	COMB.	CAL-LM	
CA	58	997	1.558						No SCALP, Not Sewered
CA	59			1.430			SEP.	CAL-LMDP	
CA	60			1.670			SEP.	CAL-LMDP	
CA	61	9	0.014	0.014	–	–	COMB.	CAL-LM	
CA	62	235	0.367	0.367	–	–	COMB.	CAL-LM	
DP	1	281	0.439	0.553	0.114	20.6%	COMB.	W-UDPPS	
DP	2 A	72	0.113	0.114	0.001	0.9%	COMB.	W-UDPPS	

TABLE 1

REVIEW LISTING OF SCA'S, SEWER SYSTEMS AND INPUT FILES
(continued)

SUBBASIN ID #		MAP AREA acres	MAP AREA sq. miles	MODEL AREA sq. miles	DIFFERENCE sq. miles	PERCENT DIFFERENCE	SEWER SYSTEM	SCALP FILE	COMMENTS
DP	2 B	397	0.620	0.620	–	–	COMB.	W–UDPPS	
DP	3	196	0.306	0.306	–	–	COMB.	W–UDPPS	
DP	4	365	0.570	0.570	–	–	COMB.	W–UDPPS	
DP	5	1216	1.900	1.900	–	–	COMB.	W–UDPPS	
DP	6	705	1.102	1.102	–	–	COMB.	W–UDPPS	
DP	7	955	1.492	1.511	0.019	1.2%	COMB.	W–UDPPS	
DP	8	422	0.659	0.659	–	–	COMB.	W–UDPPS	
DP	9	750	1.172	1.172	–	–	COMB.	W–UDPPS	
DP	10	154	0.241	0.241	–	–	COMB.	W–UDPPS	
DP	11	950	1.484	1.547	0.063	4.0%	COMB.	W–UDPPS	
DP	12	210	0.328	0.328	–	–	COMB.	W–UDPPS	
DP	13	155	0.242	0.242	–	–	COMB.	W–UDPPS	
DP	14	504	0.788	0.788	–	–	COMB.	W–UDPPS	
DP	15	387	0.605	0.613	0.008	1.3%	COMB.	W–UDPPS	
DP	16	145	0.227	0.227	–	–	COMB.	W–UDPPS	
DP	17 A	175	0.273	0.227	−0.046	−20.3%	COMB.	W–UDPPS	
DP	17 B	441	0.689	0.675	−0.014	−2.1%	COMB.	W–UDPPS	
DP	18	253	0.395	0.395	–	–	COMB.	W–UDPPS	
DP	19	1279	1.998	1.998	–	–	COMB.	W–UDPPS	
DP	20	165	0.258	0.258	–	–	COMB.	W–UDPPS	
DP	21	669	1.045	1.045	–	–	COMB.	W–SUBDP	
DP	22	44	0.069	0.069	–	–	COMB.	W–SUBDP	
DP	23	311	0.486	0.486	–	–	COMB.	W–SUBDP	
DP	24	77	0.120	0.120	–	–	COMB.	W–SUBDP	
DP	25 AB	110	0.172	0.17188	–	–	COMB.	W–SUBDP	25A &25B Combined in Model
DP	26	369	0.577	0.577	–	–	COMB.	W–SUBDP	
DP	27	324	0.506	0.473	−0.033	−7.0%	COMB.	W–SUBDP	
DP	28	312	0.488	0.488	–	–	COMB.	W–SUBDP	
DP	29	144	0.225	0.225	–	–	COMB.	W–SUBDP	
DP	30	335	0.523	0.533	0.010	1.9%	COMB.	W–SUBDP	
DP	31	334	0.522	0.522	–	–	COMB.	W–SUBDP	
DP	32	160	0.250	0.250	–	–	COMB.	W–SUBDP	
DP	33	452	0.706	0.706	–	–	COMB.	W–SUBDP	
DP	34	492	0.769	0.806	0.037	4.6%	COMB.	W–SUBDP	
DP	35	281	0.439	0.469	0.030	6.4%	COMB.	W–SUBDP	
DP	36	259	0.405	0.405	–	–	COMB.	W–SUBDP	
DP	37	112	0.175	0.175	–	–	COMB.	W–SUBDP	
DP	38	700	1.094	1.094	–	–	COMB.	W–SUBDP	
DP	39	265	0.414	0.414	–	–	COMB.	W–SUBDP	
DP	40	131	0.205	0.205	–	–	COMB.	W–SUBDP	
DP	41	417	0.652	0.652	–	–	COMB.	W–SUBDP	
DP	42	104	0.163	0.163	–	–	COMB.	W–SUBDP	
DP	43	222	0.347	0.347	–	–	COMB.	W–SUBDP	
DP	44	207	0.323	0.345	0.022	6.4%	COMB.	W–SUBDP	
DP	45	95	0.148	0.148	–	–	COMB.	W–SUBDP	
DP	46	218	0.341	0.341	–	–	COMB.	W–SUBDP	
DP	47	36	0.056	0.041	−0.015	−36.6%	COMB.	W–SUBDP	
DP	48	42	0.066	0.066	–	–	COMB.	W–SUBDP	
DP	49	389	0.608	0.606	−0.002	−0.3%	COMB.	W–SUBDP	
DP	50	172	0.269	0.163	−0.106	−65.0%	COMB.	W–SUBDP	
DP	51	217	0.339	0.358	0.019	5.3%	COMB.	W–SUBDP	
DP	52	751	1.173	1.173	–	–	COMB.	W–SUBDP	
DP	53	150	0.234	0.234	–	–	COMB.	W–SUBDP	
DP	54	153	0.239	0.239	–	–	COMB.	W–SUBDP	
DP	55	442	0.691	0.691	–	–	COMB.	W–SUBDP	
DP	56	151	0.236	0.236	–	–	COMB.	W–SUBDP	
DP	62	51	0.080	0.080	–	–	COMB.	W–SUBDP	
DP	63	473	0.739	0.739	–	–	COMB.	W–SUBDP	
DP	64	50	0.078	0.078	–	–	COMB.	W–SUBDP	
DP	65	252	0.394	0.394	–	–	COMB.	W–SUBDP	
DP	66	37	0.058	0.058	–	–	COMB.	W–SUBDP	
M	1	2919	4.561	4.561	–	–	COMB.	N–LMICH	
M	2	2783	4.348	4.348	–	–	COMB.	N–LMICH	
M	3	1088	1.700	1.700	–	–	COMB.	N–LMICH	
M	4	4393	6.864	6.847	−0.017	−0.2%	COMB.	N–LMICH	
M	5	2184	3.413	3.389	−0.023	−0.7%	COMB.	N–LMICH	
M	6	3354	5.241	5.281	0.040	0.8%	COMB.	N–LMICH	
M	7	1002	1.566	1.566	–	–	COMB.	N–LMICH	
M	8	1045	1.633	1.531	−0.102	−6.7%	COMB.	N–LMICH	
M	9	5362	8.378	8.378	–	–	COMB.	N–LMICH	
M	10 A	3109	4.858	4.884	0.026	0.5%	COMB.	N–LMICH	Former 10–1

TABLE 1

REVIEW LISTING OF SCA'S, SEWER SYSTEMS AND INPUT FILES
(continued)

SUBBASIN ID #		MAP AREA acres	MAP AREA sq. miles	MODEL AREA sq. miles	DIFFERENCE sq. miles	PERCENT DIFFERENCE	SEWER SYSTEM	SCALP FILE	COMMENTS
M	10 B	1465	2.289	2.308	0.019	0.8%	COMB.	N-LMICH	Former 10-2
M	11	1064	1.663	1.655	-0.008	-0.5%	COMB.	N-LMICH	
M	12	219	0.342	0.342	-	-	COMB.	N-LMICH	
M	13	720	1.125	1.111	-0.014	-1.3%	COMB.	N-LMICH	
M	14	691	1.080	1.080	-	-	COMB.	N-LMICH	
M	15	1365	2.133	2.133	-	-	COMB.	N-LMICH	
M	16	5416	8.463	8.511	0.049	0.6%	COMB.	N-LMICH	
M	17	626	0.978	0.978	-	-	COMB.	N-LMICH	
M	18	2107	3.292	3.292	-	-	COMB.	N-LMICH	
M	19	922	1.441	1.441	-	-	COMB.	N-LMICH	
M	20	1572	2.456	2.481	0.025	1.0%	COMB.	N-LMICH	
M	21	1110	1.734	1.748	0.014	0.8%	COMB.	W-LMICH	
M	22	126	0.197	0.194	-0.003	-1.5%	COMB.	W-LMICH	
M	23	1746	2.728	2.767	0.039	1.4%	COMB.	W-LMICH	
M	24	109	0.170	0.181	0.011	6.1%	COMB.	W-LMICH	
M	25	1435	2.242	0.469	-1.773	-378.0%	COMB.	N-LMICH	
M	26			0.150	0.150	100.0%	COMB.	W-LMICH	
M	27	777	1.214	1.222	0.008	0.7%	COMB.	W-LMICH	
M	28	362	0.566	0.416	-0.150	-36.0%	COMB.	W-LMICH	
M	29	846	1.322	1.353	0.031	2.3%	COMB.	W-LMICH	
M	30	811	1.267	1.302	0.035	2.7%	COMB.	W-LMICH	
M	31	338	0.528	0.528	-	-	COMB.	W-LMICH	
M	32	1022	1.597	1.644	0.047	2.9%	COMB.	W-LMICH	
M	33	392	0.613	0.634	0.021	3.3%	COMB.	W-LMICH	
M	34	3263	5.098	5.108	0.010	0.2%	COMB.	W-LMICH	
M	35	1012	1.581	1.553	-0.028	-1.8%	COMB.	W-LMICH	
M	36	2395	3.742	3.662	-0.080	-2.2%	COMB.	W-LMICH	
M	37	1195	1.867	1.828	-0.039	-2.1%	COMB.	W-LMICH	
M	38	268	0.419	0.398	-0.021	-5.3%	COMB.	W-LMICH	
M	39	583	0.911	0.928	0.017	1.8%	COMB.	W-LMICH	
M	40	14252	22.269	22.269	-	-	COMB.	W-LMICH	
M	41	5089	7.952	7.952	-	-	COMB.	W-LMICH	
M	42	1364	2.131	2.131	-	-	COMB.	W-LMICH	
M	43	1561	2.439	2.439	-	-	COMB.	W-LMICH	
M	44	338	0.528	0.488	-0.040	-8.2%	COMB.	W-LMICH	
M	45	977	1.527	1.525	-0.002	-0.1%	COMB.	W-LMICH	
M	46	1657	2.589	2.595	0.006	0.2%	COMB.	W-LMICH	
M	47	3267	5.105	5.145	0.040	0.8%	COMB.	W-LMICH	
M	48 DP	1033	1.614	1.500	-0.114	-7.6%	COMB.	W-LDP	
M	48 LM	8708	13.606	13.667	0.061	0.4%	COMB.	W-LMICH	
M	49 A	1403	2.192	2.175	-0.017	-0.8%	COMB.	W-LMICH	Former 49-1
M	49 BDP	1418	2.216	2.093	-0.123	-5.9%	COMB.	W-LDP	
M	49 BLM	578	0.903	0.999	0.096	9.6%	COMB.	W-LMICH	Former 49-2
M	50	6473	10.122	10.122	-	-	COMB.	W-LMICH	
M	51	11300	17.656	17.656	-	-	COMB.	W-LMICH	
M	52	4450	6.953	6.948	-0.005	-0.1%	COMB.	W-LMICH	
M	53	2613	4.083	4.083	-	-	COMB.	W-13A	
M	55 A	988	1.544	1.539	-0.005	-0.3%	COMB.	W-LDP	Former 55-1
M	55 B	2071	3.236	3.216	-0.020	-0.6%	COMB.	W-LDP	Former 55-2
MN	1 A	302	0.472	0.472	-	-	COMB.	N-LMICH	Former N1-1
MN	1 B	1416	2.213	2.002	-0.211	-10.5%	COMB.	N-LMICH	Former N1-2
MN	1 C	1768	2.763	2.763	-	-	COMB.	N-LMICH	Former N1-3
MN	1 D	544	0.850	0.850	-	-	COMB.	N-LMICH	Former N1-4
MN	1 E	640	1.000	1.000	-	-	COMB.	N-LMICH	Former N1-5
MN	2 A	265	0.414	0.414	-	-	COMB.	N-LMICH	Former N2-1
MN	2 B	669	1.045	1.045	-	-	COMB.	N-LMICH	Former N2-2
MN	2 C	464	0.725	0.725	-	-	COMB.	N-LMICH	Former N2-3
MN	3	1316	2.056	1.475	-0.581	-39.4%	COMB.	N-LM-NBC	
MN	4	1383	2.161	2.228	0.067	3.0%	COMB.	N-LM-NBC	
MN	5	948	1.481	1.481	-	-	COMB.	N-LM-NBC	
O	2	5010	7.828						
O	2 A	1378	2.153						
O	2 A	64	0.100						
O	3 C	223	0.348						
O	301	115	0.180						
O	302	135	0.211						
O	381	767	1.198						
O	382	467	0.730						
O	383	243	0.380						
O	384	211	0.330						

PRECIPITATION GAGE ASSIGNMENT

Objective

Through WY 1989, a network of 13 precipitation gages was the basis of rainfall inputs to the HSPF and SCALP models used for diversion accounting. The current study updates these model inputs to reflect the implementation of a new 25-gage network. This requires assignment of all land areas in the study region to specific gages in the network. The work items involved in the gage assignment task include the following.

- Identify gages and devise a numbering system
- Map gage locations in the CAD system
- Delineate areas to be assigned to each gage and map the delineation

The Thiessen Network or Thiessen Polygon method (Linsley & Franzini, 1979) is the selected approach to delineating and assigning the gages.

Gage Identification and Numbering

A list identifying the 25 precipitation gages in the new network is provided in Table 2. Detailed information describing the location, layout, equipment and maintenance of each gage is provided in an Illinois State Water Survey (ISWS) report titled, " Installation and Operation of a Dense Raingage Network to Improve Precipitation Measurements for Lake Michigan Diversion Accounting: Water Year 1990," (Peppler, 1991). The gage numbering provided in the first column of Table 2 is taken from the ISWS report. Names of eight letters or fewer are needed for computer directory names. TSS (Time Series Store) data set numbers are required to complete the updates of the HSPF and SCALP model inputs. The rainfall TSS number identifies the gage for precipitation input to HSPF. The remaining columns of TSS numbers identify the various HSPF output time series which also serve as SCALP inputs. Forest area HSPF outputs have been assigned only to gages that have forest land cover within their delineation.

TABLE 2

IDENTIFICATION OF THE 25–GAGE PRECIPITATION NETWORK AND TEMPORARY TSS DATA SET NUMBERS

GAGE NUMBER	DIRECTORY NAME	NAME	USGS QUAD MAP	TEMPORARY TSS DATA SET NUMBERS					
						GRASS		FOREST	
				RAINFALL	IMPRO	OLFRO	SUBRO	OLFRO	SUBRO
1	NORTHBRK	NORTHBROOK	PARK RIDGE	10	11	12	13		
2	WINNETKA	WINNETKA	PARK RIDGE	20	21	22	23		
3	DESPLNS	DES PLAINES	ARLINGTON HEIGHTS	30	31	32	33		
4	SKOKIE	SKOKIE	PARK RIDGE	40	41	42	43		
5	FRANKPK	FRANKLIN PARK	ELMHURST	50	51	52	53		
6	BRICKTWN	BRICKTOWN	RIVER FOREST	60	61	62	63		
7	DIVRSYHR	DIVERSEY HARBOR	CHICAGO LOOP	70	71	72	73		
8	WESTCHES	WESTCHESTER	HINSDALE	80	81	82	83		
9	CICERO	CICERO	BERWYN	90	91	92	93	94	95
10	CHINATWN	CHINATOWN	ENGLEWOOD	100	101	102	103		
11	LAGRANGE	LAGRANGE	BERWYN	110	111	112	113	114	115
12	BEDPARK	BEDFORD PARK	BERWYN	120	121	122	123	124	125
13	ENGLEWD	ENGLEWOOD	ENGLEWOOD	130	131	132	133		
14	SOUTHWTR	SOUTH WATER PLANT	JACKSON PARK	140	141	142	143		
15	LEMONT	LEMONT	SAG BRIDGE	150	151	152	153	154	155
16	PALOSPK	PALOS PARK	PALOS PARK	160	161	162	163	164	165
17	ALSIP	ALSIP	PALOS PARK	170	171	172	173	174	175
18	WESTPULL	WEST PULLMAN	BLUE ISLAND	180	181	182	183	184	185
19	POWCONAR	POWERS CONSRV. AREA	LAKE CALUMET	190	191	192	193		
20	ORLANDPK	ORLAND PARK	MOKENA	200	201	202	203	204	205
21	TINLEYPK	TINLEY PARK	HARVEY	210	211	212	213	214	215
22	HARVEY	HARVEY	HARVEY	220	221	222	223	224	225
23	LANSING	LANSING	CALUMET CITY	230	231	232	233	234	235
24	MATTESON	MATTESON	HARVEY	240	241	242	243	244	245
25	CHICHTS	CHICAGO HEIGHTS	CALUMET CITY	250	251	252	253	254	255

Gage Locations and Mapping

To obtain an accurate gage delineation, it is necessary to map the gage locations precisely in the CAD mapping system. Mapping of gage locations was accomplished using longitude and latitude coordinates provided for each gage in the ISWS report. The longitude and latitude coordinates were converted to Universal Transverse Mercator (UTM) grid coordinates for mapping purposes because the UTM grid system is the basis of the available CAD mapping.

The coordinate conversions were performed using Geodimeter Survey Software, Version 4.5 and equations and constants published in NOAA manual NOS NGS 5 - "State Plane Coordinate System of 1983". Computer program output summarizing the computations is provided in Appendix B. The gage locations were then mapped according to UTM grid coordinates.

Gage locations were checked by printing drawings at a scale of 1" = 2,000' and overlaying the drawings on USGS 7-1/2 minute maps. The plotted gage locations were compared with the physical locations described in the ISWS report. This process verified the conversion procedure as well as the latitude and longitude coordinates obtained from the ISWS report.

Delineation of Gage Areas

The Thiessen Polygon method uses triangulation to define the region that is closer to a particular point (e.g. a rain gage) than all other points defined in the network. The triangulation lines are constructed by connecting each gage location with each of its immediate neighbors. This process frequently will result in pairs of lines that intersect. Such intersections are eliminated by deleting the longer of the two intersecting lines. What remains is a system of compact triangles connecting the gage locations. This system is the set of smallest triangles defined by the gage points.

Next, a perpendicular bisector is extended from the midpoint of each triangulation line. Each perpendicular bisector is extended until it intersects another bisector. The bisectors will always meet in groups of three (except in the unusual case where four adjacent gages define a perfect square, in which case four bisectors will intersect in the center). When all of the bisectors have been extended and trimmed, the Thiessen Polygons are complete and the triangulation lines may be discarded.

The completed Thiessen Polygons for the 25-gage network are shown in Figure 2. The gage delineation lines define the area assigned to the gage located in each polygon. Each point in the study area has been assigned to the gage nearest to it. The CAD drawing layers containing the gage locations, triangulation lines and Thiessen Polygons have been added to the diversion accounting CAD mapping system.

LAND COVER ANALYSIS

Objective

The SCALP modeling requires estimates of impervious and pervious land cover areas for each SCA. Modeling of the "ungaged" watersheds requires estimates of forested area as well. With the study area in excess of 480 square miles, it is not cost-effective to conduct a direct delineation of land cover areas. Therefore, an indirect approach based on land use is employed. The following describes the procedure to estimate impervious, pervious and forest cover areas throughout the study area.

Approach

The land cover analysis uses a matrix multiplication procedure to convert land use areas to land cover areas, where land cover is one of impervious, pervious or forest. There are eleven defined land uses. These land uses have been assigned specific proportions of

pervious and impervious area, as shown in Table 3. The information in Table 3 is derived from standard sources such as the Soil Conservation Service Technical Release 55 (TR-55), (SCS, 1981).

Table 3 represents a 11 by 2 matrix that is the key to the land cover computations. Land use areas were determined in each of the SCA's and ungaged areas. These land use assignments yield a matrix that is 209 subbasins by 11 land uses. The 209 by 11 matrix of land uses is multiplied by the 11 by 2 land use to land cover conversion matrix to obtain a 209 by 2 matrix of the desired impervious and pervious areas in each subbasin.

There are slight variations in the above approach when forest land use is considered. Forest land use was assigned only in the ungaged areas where forest land use was translated directly into forest land cover. The ungaged areas were partitioned into 15 subareas for the analysis and are included in the above total of 209 subbasins.

Land Use Delineation

Land use, as defined in Table 3, was delineated for the study area on 1" = 400' scale aerial photographs. Overlay plots showing the SCA and Thiessen Polygon boundaries were prepared at 1" = 400'. Geographic features were also plotted on the overlays to aid in aligning the overlays on the aerial photos. These 161 aerial photo sheets cover the entire study area. Figure 3, located after the appendices at the end of this report, shows the location and numbering of each sheet. The sheets overlap one to two inches on each side. Match lines were drawn on the overlays to coincide with the outlines shown on Figure 3, to ensure there would be no overlap in the land use delineations from sheet to sheet.

Land use areas were delineated on the overlays using the color scheme shown in Table 3. The outline of each land use area was drawn and labelled. For residential areas, the technicians performed spot checks of dwelling unit density until they became proficient at identifying residential densities by eye. The residential densities indicated in Table 3 include streets and small parks in the aggregate lot sizes.

TABLE 3

LAND COVER PROPORTIONS
FOR EACH LAND USE

LAND USE	PERCENT IMPERVIOUS	PERCENT GRASS	AERIAL MAP COLOR
Forest	0	100 *	
Open Space / Park	5	95	
Low Density Residential: (1.1 acre median lot)	19	81	
Medium Density Residential: (1/2 acre median lot)	40	60	
High Density Residential: (1/5 acre median lot)	56	44	
Multifamily and High Rise	70	30	
Commercial	85	15	
Industrial	72	28	
Highway Corridor:			
with Grassed Median	50	50	
No Median	80	20	
Open Water	100	0	OPEN WATER

* In the ungaged watersheds, forest land use is translated to 100 percent forest land cover.

Land use areas within each SCA were measured using an electronic planimeter. Many SCA's extended across several sheets but areas were recorded on a sheet by sheet basis. The measured areas were entered into a spreadsheet titled LUBASE. A listing of this spreadsheet is provided in Appendix C. Note that the forest land use was assigned only in the ungaged watersheds which are indicated by the prefixes CAL (Calumet) and LDP (Lower Des Plaines).

Land Cover Computations

The measured land use areas recorded in LUBASE were sorted by subbasin identifier so that records for SCA's located on several sheets appeared in sequence. The sorted data appear in a file named LUSORT. The sorted data were exported to an ASCII data file for input to a small accumulating program written for the project. The accumulator program, called ACC, computes the total area in each land use by adding together the measured areas obtained from individual map sheets. The result is a database consisting of the area of each land use in each SCA. The land use database is the matrix that is multiplied by the conversion matrix in Table 3 to obtain the two-column matrix of land cover in each SCA. This database is listed in Appendix D.

The next step is to partition each SCA according to gage assignment. The gage assignment breakdown for the SCA's was computed electronically by the CAD software. Of the 197 SCA's analyzed, 78 are split into two or more parts by gage assignment boundaries. At most the SCA's were split into four parts. Land cover in the individual partitions was determined using the ratio of the area of each partition to the total area of the SCA. Each partitioned area has the same percent impervious as the entire SCA it comes from. Exceptions were made for two very large SCA's, M40 and M51. Each gage assignment partition in M40 and M51 was subjected to an independent land use analysis which was converted to land cover by the previously described method. Results for these SCA's differed slightly from results using the area ratio method. Therefore, all other SCA's were divided into gage areas using the area ratio rather than individual gage area analysis.

Results

The matrix multiplication yields land cover areas (impervious area and grass area) for each SCA. The results are provided in Appendix E. An overall summary of the results by major area is in Table 4. As shown, the Calumet, Des Plaines and Mainstream, North Leg combined sewer areas were found to have overall imperviousness of approximately 55 percent while the Mainstream area is approximately 60 percent impervious area. The ungaged areas had significantly less impervious area.

The SCA land cover areas were split in proportion to the area assigned to each gage within the SCA. The results of the partitioning is shown in Appendix F expressed in acres and in Appendix G in square miles. The data in Appendix G was the source of information for updating the SCALP model representation of each SCA.

Land Cover Analysis for the Ungaged Watersheds

The analysis to determine land cover in the ungaged watershed is roughly equivalent to the approach used for the SCA land cover. Key differences are the introduction of forest land cover and that each gage assignment partition was analyzed individually. The relevant analysis data are present in Appendices C and D. The prefixes CAL and LDP are used to identify the Calumet and Lower Des Plaines ungaged watersheds respectively. Areas are numbered according to the precipitation gage assigned to the area. Land cover results for the ungaged areas are provided in Table 5. As shown, the gage assignments partition the Calumet ungaged area into eight areas and the Lower Des Plaines area into seven areas.

COMPUTER FILE REVISIONS

The HSPF and SCALP model input files used for diversion accounting were revised to reflect implementation of the 25-gage precipitation network and the updated land cover computations. The new 25-gage network affects both the HSPF and SCALP models while

TABLE 4

LAND COVER RESULTS BY MAJOR DRAINAGE AREA

BASIN	BASIN AREA (SQ. MI.)	IMPERV. AREA (SQ. MI.)	GRASS AREA (SQ. MI.)	FOREST AREA (SQ. MI.)	PERCENT IMPERV.	PERCENT GRASS	PERCENT FOREST
GAGED BASINS							
CALUMET	88.042	47.711	40.332	0.000	54.2%	45.8%	0.0%
DES PLAINES	32.323	17.960	14.321	0.000	55.6%	44.3%	0.0%
MAINSTREAM	205.741	127.184	82.386	0.000	61.8%	40.0%	0.0%
MAINSTREAM–NORTH LEG	15.180	8.298	6.882	0.000	54.7%	45.3%	0.0%
UNGAGED BASINS							
UNGAGED CALUMET	84.166	33.862	45.696	4.607	40.2%	54.3%	5.5%
UNGAGED LOWER DES PLAINES	57.914	19.308	21.424	17.182	33.3%	37.0%	29.7%

TABLE 5

LAND COVER RESULTS FOR THE UNGAGED WATERSHEDS

BASIN	GAGE NUMBER	BASIN AREA (ACRES)	AREA SQ. MI.	% OF TOTAL AREA	SQ. MI. IMPERV	SQ. MI. GRASS	SQ. MI. FOREST
CAL 12	12	1601	2.502	3.0%	1.421	1.080	0.000
CAL 16	16	1913	2.989	3.6%	0.791	2.137	0.061
CAL 17	17	15870	24.797	29.5%	10.421	12.353	2.023
CAL 18	18	1203	1.880	2.2%	0.632	1.248	0.000
CAL 20	20	5355	8.367	9.9%	3.292	5.068	0.007
CAL 21	21	17775	27.773	33.0%	9.712	15.545	2.516
CAL 22	22	8130	12.703	15.1%	6.395	6.308	0.000
CAL 24	24	2019	3.155	3.7%	1.198	1.957	0.000
CAL TOTAL		53866	84.166	100.0%	33.862	45.696	4.6071
LDP 9	9	9	0.014	0.02%	0.010	0.004	0.000
LDP 11	11	8453	13.208	22.8%	4.716	4.751	3.741
LDP 12	12	6556	10.244	17.7%	6.041	4.202	0.000
LDP 15	15	873	1.364	2.4%	0.372	0.992	0.000
LDP 16	16	18008	28.137	48.6%	5.539	9.175	13.423
LDP 17	17	2547	3.980	6.9%	2.206	1.774	0.000
LDP 20	20	619	0.967	1.7%	0.424	0.525	0.018
LDP TOTAL		37065	57.914	100.0%	19.308	21.424	17.182

the updated land cover areas are reflected only in the SCALP models. The following provides specific information regarding the model input revisions.

HSPF Revisions

HSPF model input files to model impervious and grass (pervious) areas were created for each of the 25 precipitation gages. There are also models for forest area for the 13 gages that have forest area in their gage assignment area. The filenames IMPERV.INP, GRASS.INP and FOREST.INP are used in each case. The gage assignments are differentiated by storing the files in directories bearing the name listed in Table 2. In each file, the TSS number indicating precipitation input was changed to the number given in Table 2. The impervious area HSPF runs produce a single TSS output labeled IMPRO. The grass and forest area HSPF runs produce two output TSS called OLFRO and SUBRO. The EXTERNAL TARGETS references to these outputs in the HSPF inputs were changed to the numbering shown in Table 2. In all, 63 HSPF input files were created and submitted to the Corps.

SCALP Revisions

For diversion accounting, SCALP model inputs are arranged into 15 computer files. Eight of these contain inputs for combined sewer areas. Only the combined sewer SCALP inputs were revised in this study. The main model revisions are for the TSS file references that specify the runoff inputs and applicable land area. The runoff input TSS file numbers are given in the DATA block of the input, and the land areas used to compute total hourly runoff volume are specified in the LANDS subblock of each SCA block. The required land areas are the impervious and pervious land area within each gage assignment area in each SCA. TSS numbering was according to the number given for IMPRO, OLFRO and SUBRO time series in Table 2, and land areas were those given in Appendix G. The land area for SUBRO unit runoff was taken to be the pervious land area. The revised SCALP input files were delivered to the Corps on diskette.

R/USARMY/USARMYPJ.EDL

REFERENCES

Linsley, R.F., and L.B. Franzini, Water Resources Engineering, McGraw-Hill, New York, 1979.

Peppler, R.A., "Installation and Operation of a Dense Raingage Network to Improve Precipitation Measurements for Lake Michigan Diversion Accounting: Water Year 1990," Illinois State Water Survey Contract Report 517, Champaign, IL, September 1991.

U.S. Department of Agriculture, Soil Conservation Service, "Urban Hydrology for Small Watersheds," SCS Technical Report No. 55, 1986.

U.S. Department of Commerce - National Oceanic and Atmospheric Administration, "State Plane Coordinate System of 1983," manual NOS NGS 5, 1984.

R/USARMY/REFERENCE.EDL

APPENDIX A

INDEX TO CAD DRAWING LEVELS

Filename: BORDERS2.DSN

Microstation Level	AutoCAD Layer Name	Description
01	LIBERTYVILLE	USGS Quad Border
02	WAUKEGAN	USGS Quad Border
03	LAKE ZURICH	USGS Quad Border
04	WHEELING	USGS Quad Border
05	HIGHLAND PARK	USGS Quad Border
06	STREAMWOOD	USGS Quad Border
07	PALATINE	USGS Quad Border
08	ARLINGTON HEIGHTS	USGS Quad Border
09	PARK RIDGE	USGS Quad Border
10	EVANSTON	USGS Quad Border
11	ELMHURST	USGS Quad Border
12	RIVER FOREST	USGS Quad Border
13	CHICAGO LOOP	USGS Quad Border
14	HINSDALE	USGS Quad Border
15	BERWYN	USGS Quad Border
16	ENGLEWOOD	USGS Quad Border
17	JACKSON PARK	USGS Quad Border
18	ROMEOVILLE	USGS Quad Border
19	SAG BRIDGE	USGS Quad Border
20	PALOS PARK	USGS Quad Border
21	BLUE ISLAND	USGS Quad Border
22	LAKE CALUMET	USGS Quad Border
23	MOKENA	USGS Quad Border
24	TINLEY PARK	USGS Quad Border
25	HARVEY	USGS Quad Border
26	CALUMET CITY	USGS Quad Border
27	HIGHLAND	USGS Quad Border
28	GARY	USGS Quad Border
29	FRANKFORT	USGS Quad Border
30	STEGER	USGS Quad Border
31	DYER	USGS Quad Border
32	ST. JOHN	USGS Quad Border
33	BEECHER WEST	USGS Quad Border
34	U.S ARMY BORDER	USCOE Standard Border and Title Block

Filename: OVERALL.DGN

Microstation Level	AutoCAD Layer Name	Description
01		Arrowheads
02		
03	AREA–SCA	SCA Boundaries
04	TARP–DS	Drop Shafts
05	TARP–CO	Construction Shafts
06	AREA–DLM	Diverted Lake Michigan Watershed Boundary
07	TARP–TUNN	Tunnels
08	TARP–PS	Pump Stations
09	TARP–STP	Treatment Plants
10	MISC–FCRR	Reservoirs (Flood Control)
11	TARP–RES	Reservoirs (Overflow)
12	MSDG–ISEW	Interceptors
13	AREA–LDP	Ungaged Watershed Boundary
14	TARP–CS	Connecting Structures
15	TARP–AS	Access Shafts
16	MSDG–TPB	FPA Boundaries
17	AREA–NDA	Obsolete (1975) SCA Boundaries
18	TARP–IS	Intercepting Structures
19		
63		Overall Border

Filename: GAGE.DGN

Microstation Level	AutoCAD Layer Name	Description
01	GAGES	Gage Locations
02	GAGEDELIN	Delineations
03	TRIANGLE	Triangulation Lines

Filename: RIVERS.DGN

Microstation Level	AutoCAD Color	Description
01	WHITE, GREEN	Railroads
02	WHITE	Airports
03	WHITE, MAGENTA	Miscellaneous
04	BLUE	Rivers/Streams
05	WHITE	Intermittent Streams

APPENDIX B

COORDINATE CONVERSION COMPUTER OUTPUT

GEODIMETER SURVEYING SOFTWARE - V4.5
STATE PLANE/UTM - GEODETIC COORDINATE COMPUTATIONS
NAD 1983, UTM, ZONE 16

UTM Northing meters	UTM Easting meters	Geodetic Latitude dd mm ss.sssss	Geodetic Longitude ddd mm ss.sssss	Grid Angle dd mm ss.s	Grid Factor
4662415.762	428233.994	42 06 38.00000	87 52 05.00000	-0 34 55.6	0.9996
4662015.928	437876.694	42 06 28.00000	87 45 05.00000	-0 30 13.8	0.9996
4652615.720	427375.524	42 01 20.00000	87 52 38.00000	-0 35 14.1	0.9996
4652982.669	437406.363	42 01 35.00000	87 45 22.00000	-0 30 22.4	0.9996
4642654.822	427181.387	41 55 57.00000	87 52 42.00000	-0 35 13.1	0.9996
4643178.318	436951.346	41 56 17.00000	87 45 38.00000	-0 30 29.9	0.9996
4642661.139	447448.638	41 56 03.00000	87 38 02.00000	-0 25 25.0	0.9996
4632911.145	426874.077	41 50 41.00000	87 52 51.00000	-0 35 15.5	0.9996
4633029.161	437138.127	41 50 48.00000	87 45 26.00000	-0 30 18.7	0.9996
4632765.469	446798.983	41 50 42.00000	87 38 27.00000	-0 25 39.1	0.9996
4623311.927	427537.821	41 45 30.00000	87 52 18.00000	-0 34 50.0	0.9996
4623187.367	437467.112	41 45 29.00000	87 45 08.00000	-0 30 03.5	0.9996
4623263.169	447189.994	41 45 34.00000	87 38 07.00000	-0 25 23.2	0.9996
4622995.513	454739.540	41 45 27.00000	87 32 40.00000	-0 21 45.3	0.9996
4614420.455	416949.643	41 40 38.00000	87 59 52.00000	-0 39 48.6	0.9996
4612732.802	427523.239	41 39 47.00000	87 52 14.00000	-0 34 43.4	0.9996
4614057.679	437502.961	41 40 33.00000	87 45 03.00000	-0 29 57.3	0.9996
4614052.182	445757.799	41 40 35.00000	87 39 06.00000	-0 25 59.9	0.9996
4613524.879	455119.003	41 40 20.00000	87 32 21.00000	-0 21 30.5	0.9996
4604133.902	426903.854	41 35 08.00000	87 52 37.00000	-0 34 55.5	0.9996
4604218.414	437579.382	41 35 14.00000	87 44 56.00000	-0 29 49.6	0.9996
4603957.620	447024.515	41 35 08.00000	87 38 08.00000	-0 25 18.7	0.9996
4603963.907	455175.005	41 35 010.0000	87 32 16.00000	-0 21 25.0	0.9996
4596867.342	438836.821	41 31 16.00000	87 43 59.00000	-0 29 09.4	0.9996

4596705.254 452116.694 41 31 14.00000 87 34 26.00000 -0 22 49.6 0.9996

APPENDIX C

RAW LAND USE DATA IN ACRES AS MEASURED DIRECTLY FROM THE 1"=400' SCALE AERIAL PHOTO OVERLAYS

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
1	M 1			938.13				40.30					978.43
3	M 1				75.13								75.13
3	M 4		279.52	374.60	5.19		45.35	300.60			46.07		1051.33
4	M 1			1500.28				185.79				16.65	1702.72
4	M 2			159.03				22.45				52.10	233.58
4	M 4			121.72				1.70					123.42
5	M 1			56.79	55.88							50.05	162.72
5	M 2			23.49	231.39		162.04	173.64				21.56	612.12
6	DP 1			201.64			17.80	43.25					262.69
6	DP 2 A			36.19									36.19
6	DP 2 A			19.43									19.43
6	DP 3			10.90				11.96					22.86
6	DP 4			4.69				7.21	7.33				19.23
7	DP 1			11.72				6.59					18.31
7	DP 2 A			16.38									16.38
7	DP 2 B			258.41	70.16			43.75		6.63			378.95
7	DP 3			12.19				8.39					20.58
8	DP 2 B			18.05									18.05
8	MN 4		131.57	549.64	62.33			46.92					790.46
8	DP 5			36.76									36.76
9	MN 3				102.00				43.11	11.31			156.42
9	MN 4			198.50				7.12					205.62
9	MN 5			622.89					234.77				857.66
9	M 6			1.65					2.06	0.39			4.10
10	MN 3			83.48									83.48
10	M 4		192.13	1564.45			51.41	62.87	183.55		44.46		2098.87
10	MN 5			62.65			14.22				13.47		90.34
11	M 2			396.75				74.97	61.85			55.38	588.95
11	M 3			379.75				23.88	179.56			60.78	643.97
11	M 4			687.99	116.13			63.78	131.07				998.97
11	M 6			3.95					8.82				12.77
12	M 2			332.31			684.53	98.02					1114.86
12	M 3			50.04			6.45						56.49
13	DP 3			111.83									111.83
13	DP 4			18.98	120.76				206.03				345.77
14	DP 3			34.08				6.65					40.73
14	DP 5			375.52	66.79			53.10					495.41
14	DP 6		18.89	122.06			35.20	12.69					188.84
14	DP 7		46.70		166.38			34.57					247.65
15	MN 1 A			302.00									302.00
15	MN 1 B			385.76				68.49					454.25
15	MN 1 C			5.30									5.30
15	MN 4			180.90									180.90
15	DP 5		125.18	23.99	419.71	51.31		63.64					683.83
15	DP 6			293.57	117.97			104.62					516.16
15	DP 7			452.34				43.10					495.44

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
16	MN 1 B		376.70	160.83				102.10					639.63
16	MN 1 C			31.80				4.61					36.41
16	MN 2 A				265.00								265.00
16	MN 2 B				152.19								152.19
16	MN 3		142.85						738.71				881.56
16	MN 4			148.48				57.54					206.02
16	M 6								175.92	11.64			187.56
16	M 25		201.03										201.03
17	MN 2 B		6.95	47.43	117.21								171.59
17	MN 3			45.21	3.83			10.48	134.39		0.63		194.54
17	M 4			48.77			11.16	60.48					120.41
17	M 6		128.41	995.98	504.00		8.41	282.03	26.01		81.12		2025.96
18	M 3			174.39					132.92			22.46	329.77
18	M 5		13.56	802.19				131.02	0.00			131.79	1078.56
18	M 6			428.81				97.95	596.85				1123.61
19	M 2		88.55	63.18			64.68		17.08				233.49
19	M 3			28.57			29.20						57.77
19	M 5		87.22	85.78			482.33	56.61	4.07				716.01
19	M 9		1.91				766.47	6.34	39.92				814.64
20	MN 1 B			150.12				55.26					205.38
20	MN 1 C			323.46				108.10		73.04			504.60
20	DP 7			156.86	55.05								211.91
20	DP 8			201.58	126.33			94.09					422.00
20	DP 9			253.23	233.19		194.12	64.02		5.44			750.00
21	MN 1 B			62.79	28.04			25.91					116.74
21	MN 1 C			806.02	199.78			166.92		48.97			1221.69
21	MN 1 D			254.97				6.62					261.59
21	MN 1 E			140.80				16.71		16.49			174.00
21	M 10 A		14.43	517.85						4.09			536.37
21	M 25		168.82	3.85									172.67
22	MN 1 D		21.01	163.02				8.00	90.38				282.41
22	MN 1 E		22.54	338.73				47.76	30.10		26.87		466.00
22	MN 2 B			194.92							4.91		199.83
22	MN 2 C				428.97				7.44		27.59		464.00
22	M 8			50.25					156.45				206.70
22	M 10 A			218.19				108.66	10.32		16.49		353.66
22	M 10 B							1.06					1.06
22	M 25		622.70	62.45	15.32						21.86		722.33
23	MN 2 B			78.54				54.30	12.55				145.39
23	M 5			165.18								10.46	175.64
23	M 7		19.14	548.06				127.59				21.22	716.01
23	M 8		180.41	473.27				164.05	2.51			18.06	838.30
23	M 9			173.29					63.33			6.42	243.04
23	M 10 A			70.64				45.58				3.64	119.86
23	M 25		150.69	142.92				45.36					338.97
24	M 5		16.48				124.00	73.31					213.79
24	M 7		271.50	14.49									285.99
24	M 9		204.71	1390.17			427.93	183.68	51.31	37.16			2294.96
26	DP 12			120.71				89.29					210.00
26	DP 13			103.90				19.72	31.38				155.00

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
26	DP 14			236.95				11.81	123.50				372.26
26	DP 15							0.97					0.97
27	DP 10			154.00									154.00
27	M 10 A								64.66				64.66
27	DP 11		14.64	781.60									796.24
27	M 16			89.95				10.24					100.19
28	M 10 A		172.57	737.02				117.06					1026.65
28	M 10 B		59.46	184.48				33.16					277.10
28	M 16		56.86	1077.55				156.35					1290.76
29	M 10 A			563.89				141.52	77.57		70.34		853.32
29	M 10 B		40.08	473.13				133.72	16.54		29.84		693.31
29	M 16			824.07				138.23	121.06				1083.36
30	M 9			1.54				1.83				1.44	4.81
30	M 10 A			104.72				25.35	17.74		6.67		154.48
30	M 10 B		18.03	364.98				110.30	0.22				493.53
30	M 11		3.65	177.30				34.81	22.68			29.38	267.82
30	M 12			171.60				42.03	5.37				219.00
30	M 13			18.62				41.90	86.05			9.09	155.66
30	M 14		35.99	417.43				158.08	78.34		1.16		691.00
30	M 15							121.57	3.55			12.77	137.89
30	M 16			205.32				42.91	44.65		32.22		325.10
30	M 17			42.11				24.42	42.86		9.71		119.10
31	M 9		131.37	9.99			246.56	108.13					496.05
31	M 11		9.47	506.48			85.20	195.03					796.18
31	M 13			379.02				185.32					564.34
31	M 15			285.81				112.84					398.65
32	M 9		227.61				539.78				55.01		822.40
32	M 15							6.22					6.22
33	DP 14			80.03					51.71				131.74
33	DP 15		3.60	309.83					72.60				386.03
33	DP 16		4.58	129.20					11.22				145.00
33	DP 17 A			67.77									67.77
33	DP 17 B			41.93	205.68			48.24	145.15				441.00
33	DP 20								86.63				86.63
34	DP 11			73.54			27.81	52.41					153.76
34	DP 17 A		36.34	67.50				3.39					107.23
34	DP 18			162.90	53.76							36.34	253.00
34	DP 19			1062.90				72.03					1134.93
34	DP 20							78.37					78.37
35	M 16		59.77	1097.68				186.47	160.73				1504.65
35	DP 19			107.71				36.36					144.07
35	M 51		33.14	757.04				106.71	155.90				1052.79
36	M 16		32.12	806.45				151.85	71.49				1061.91
36	M 18		16.81	521.30			11.42	36.01	201.78				787.32
36	M 47			101.21				9.34	111.24				221.79
36	M 51		1.62	300.12				61.56	144.96				508.26
37	M 15							35.36	15.60			3.69	54.65
37	M 16			50.03									50.03
37	M 17			326.10				15.09	62.46		63.29	4.16	471.10

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
37	M 18			892.11				111.02	63.14	36.68	4.75		1107.70
37	M 20			780.75				74.48	14.94	31.44			901.61
37	M 23							6.04					6.04
37	M 47			10.73				1.65					12.38
38	M 9						4.95						4.95
38	M 15			459.59			103.14	37.20	133.79			18.05	751.77
38	M 17						35.80						35.80
38	M 18			36.69			4.90		151.79		18.60		211.98
38	M 19				443.74		84.76	36.25	118.89			22.49	706.13
38	M 20			289.28				37.80	91.46		9.01		427.55
38	M 21			84.49					78.31			6.99	169.79
38	M 22			17.84					84.84		3.74		106.42
38	M 23			85.06				41.79	2.06		0.89		129.80
38	M 24								0.10				0.10
39	M 9		368.11	1.23			311.81						681.15
39	M 15						15.82						15.82
39	M 19		19.08	91.06			63.57	42.16					215.87
39	M 21			67.42			217.74	23.03					308.19
40	DP 21						69.17		94.98				164.15
41	DP 21		16.03	309.70				30.10	149.02				504.85
41	DP 27			191.69					2.78				194.47
41	DP 31			179.09									179.09
41	DP 52			405.53	79.08				130.06				614.67
42	DP 22			44.00									44.00
42	DP 23		56.06	183.01			18.63	53.30					311.00
42	DP 24			77.00									77.00
42	DP 25 A			80.00									80.00
42	DP 25 B							30.00					30.00
42	DP 26		9.86	145.45	156.60			16.97	40.12				369.00
42	DP 27		14.35	82.88			10.47		21.83				129.53
42	DP 28			22.90			123.42		19.55				165.87
42	DP 29			139.86					4.14				144.00
42	DP 31			61.68			22.46						84.14
42	DP 52				136.33								136.33
42	DP 63		11.37		302.48		12.28	40.05					366.18
42	DP 64			39.24				6.21	4.55				50.00
43	M 51		43.15	1740.00	179.62		188.43	370.54	26.94				2548.68
43	DP 63				106.82								106.82
44	M 47			470.02			43.03	12.72	457.41				983.18
44	M 51		13.84	1091.76			151.74	31.12	442.31				1730.77
45	M 20		7.25	209.00					6.20				222.45
45	M 23		202.47	755.87					196.28				1154.62
45	M 27			207.99					13.09				221.08
45	M 32			6.83					17.91				24.74
45	M 36		58.87	229.46			0.79		349.96				639.08
45	M 47		33.29	216.37			51.79		50.78				352.23
46	M 20			20.39									20.39
46	M 21			1.40					88.80			17.42	107.62
46	M 22			5.86					13.72				19.58
46	M 23			380.25				33.45	31.59		10.25		455.54
46	M 24								99.70			6.96	106.66

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
46	M 27			468.29				16.27	58.33		11.03	2.00	555.92
46	M 28								149.34		8.91	12.82	171.07
46	M 29		11.80	294.42			14.87	77.96	283.59		55.80		738.44
46	M 32		5.06				152.21	73.03	168.13				398.43
47	M 21		35.63					428.69	30.40		29.68		524.40
47	M 24								2.24				2.24
47	M 28						20.77	25.10	131.78			13.28	190.93
47	M 29							69.15	28.39		10.02		107.56
47	M 30		10.77	611.74			67.62		81.49		25.99	13.39	811.00
47	M 31							116.16				30.50	146.66
47	M 32							43.12	0.71		7.25		51.08
47	M 44		92.75					143.62			15.53	20.32	272.22
48	DP 31			25.30									25.30
48	DP 32		0.68	16.66									17.34
48	DP 33		33.52	246.40							25.66		305.58
48	DP 34			438.37				40.34	13.29				492.00
49	DP 28			128.45				17.68					146.13
49	DP 30		17.20	261.78				38.14	3.69		14.19		335.00
49	DP 31			45.47									45.47
49	DP 32			122.86							19.80		142.66
49	DP 33			146.42									146.42
50	M 51		92.58	1695.54				195.98	9.94		64.80		2058.84
50	M 52		60.77	414.40				40.75	47.27		24.84		588.03
51	M 45			77.02			15.42						92.44
51	M 47			552.91			18.96	40.57	342.47		38.20		993.11
51	M 51			322.86				34.95					357.81
51	M 52			358.33				160.90	584.12				1103.35
52	M 36		9.51	497.92			53.46	28.29	66.41		58.50		714.09
52	M 37								43.22				43.22
52	M 42		162.99	197.62			78.67	144.61	247.54		5.15		836.58
52	M 43			294.27			141.73	44.21	72.70		22.54		575.45
52	M 45			18.43				2.29					20.72
52	M 47			227.45			27.70		14.77		24.88		294.80
53	M 32			55.22			135.27	266.98					457.47
53	M 35			98.08			135.59	169.33	126.32		21.23		550.55
53	M 36			127.14	114.58		204.91	333.29	125.90		56.53		962.35
53	M 37		19.28	307.82	13.39		7.99		167.32				515.80
53	M 42			18.23	7.79				2.12				28.14
54	M 31							162.07	8.18			21.09	191.34
54	M 32							84.04			6.24		90.28
54	M 33							140.08	222.59		18.71	10.62	392.00
54	M 34		149.38					701.79	298.97			21.06	1171.20
54	M 35							13.41	144.36		52.78	4.36	214.91
54	M 44		27.89					37.89					65.78
54	M 50							71.95	18.60				90.55
55	DP 53			23.88									23.88
55	DP 54			81.40									81.40
56	DP 35			98.00									98.00
56	DP 37			112.00									112.00
56	DP 38			555.52	43.55		59.69	39.62	1.62				700.00

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
56	DP 39			265.00									265.00
56	DP 40			131.00									131.00
56	DP 46			182.97					16.35				199.32
56	DP 50			11.75									11.75
56	DP 53			126.12									126.12
56	DP 54			71.60									71.60
57	DP 35			183.00									183.00
57	DP 36		48.42	161.89			24.00		24.69				259.00
57	DP 41			54.62	344.54			17.84					417.00
57	DP 42		2.85		100.44			0.71					104.00
57	DP 43			1.35	188.17			32.48					222.00
57	DP 44			7.81	199.19								207.00
57	DP 45			41.93	53.07								95.00
57	DP 47			17.75	17.85			0.40					36.00
57	DP 48							25.33					25.33
57	DP 49		10.60		15.41			23.27					49.28
57	DP 50		49.75	13.82									63.57
57	DP 51			4.15									4.15
57	DP 62				39.83			11.17					51.00
57	DP 66				25.67			11.33					37.00
58	M 51			1350.15				196.19	130.86				1677.20
58	M 52			666.18				37.93	275.33				979.44
59	M 46								16.70			25.54	42.24
59	M 45			279.17					306.06			21.66	606.89
59	M 47			65.55					343.96				409.51
59	M 52			679.99				199.29	731.09				1610.37
60	M 37								48.26				48.26
60	M 41			227.35					431.15		44.65		703.15
60	M 42			240.59				15.59	243.10				499.28
60	M 43		55.13	527.98					402.44				985.55
60	M 46			6.55					91.32			3.46	101.33
60	M 45			155.62					74.15		13.70	13.48	256.95
61	M 34			355.02					193.55		26.58	4.64	579.79
61	M 35								201.54				201.54
61	M 36								60.24			19.24	79.48
61	M 37			155.16					397.31		5.60	29.65	587.72
61	M 38			37.48				1.43	199.08		16.77	13.24	268.00
61	M 39		8.28	324.43				51.90	189.82		8.57		583.00
61	M 40								37.18				37.18
61	M 41		65.27	16.13					19.52				100.92
61	M 50			44.08					191.53			5.41	241.02
62	M 34			397.21			463.34	112.86	299.02		195.58		1468.01
62	M 35								37.29		7.71		45.00
62	M 50		41.73	5.98			735.62	49.60	92.42		64.02		989.37
63	M 50		69.63					41.54	20.00		18.84		150.01
64	M 53		122.90	369.79	136.37								629.06
64	DP 55			400.98				41.02					442.00
64	DP 56			150.03							0.97		151.00
64	DP 65		42.64	205.92							3.44		252.00
65	DP 46			1.89					16.79				18.68
65	DP 50			68.06				17.21	2.73				88.00

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
65	DP 51			191.79				21.06					212.85
65	M 53		96.17	1093.32	100.19			135.92	127.64				1553.24
66	LDP 9								9.00				9.00
66	LDP 11								121.96				121.96
66	LDP 12								81.00				81.00
66	DP 48								16.67				16.67
66	DP 49			300.60				39.12					339.72
66	DP 50			8.68									8.68
66	M 53			396.23					34.47				430.70
66	M 55 A			84.76					95.89			24.64	205.29
67	M 48 LM			5.22				3.88	24.77				33.87
67	M 49 A			254.08				34.18	584.13	55.81		29.29	957.49
67	M 49 BLM			293.96				35.28					329.24
67	M 51		270.19	439.23					511.99			42.41	1263.82
68	M 46				282.18			37.36	330.56	10.41			660.51
68	M 48 LM			611.21			46.31	123.63	503.49	32.54		17.44	1334.62
68	M 49 A			183.89				2.38	165.39	17.79		4.93	374.38
68	M 51								93.20			8.63	101.83
68	M 52								162.89			5.92	168.81
69	M 41			1158.93				126.05	660.99				1945.97
69	M 46			222.71				33.19	387.31				643.21
70	M 40		64.34	784.72					393.69				1242.75
70	M 41			327.13					686.47				1013.60
70	M 50								366.08				366.08
71	M 40		136.42	90.75			447.71		162.28				837.16
71	M 50		26.27	364.03			821.69		412.46		116.35		1740.80
72	M 40						98.04						98.04
72	M 50		101.75		87.11		1075.59				63.28		1327.73
73	LDP 11								184.58			9.49	194.07
73	M 55 B								71.72			7.43	79.15
74	LDP 11								358.02			38.08	396.10
74	LDP 12								146.39				146.39
74	M 55 A			327.71					455.00				782.71
74	M 55 B			55.64					868.71				924.35
75	M 48 DP			6.98									6.98
75	LDP 12								282.80				282.80
75	M 48 LM			134.63									134.63
75	M 49 A			71.13									71.13
75	M 49 BLM			157.28				21.04					178.32
75	M 55 B								690.98				690.98
75	M 49 BDP			1004.88				49.75	224.57				1279.20
76	LDP 12								195.62				195.62
76	M 46			86.41				0.97					87.38
76	M 48 LM			764.78				100.94	610.85				1476.57
76	M 49 BDP			62.64				21.84	54.32				138.80
76	M 55 B								376.52				376.52
76	M 49 BLM								70.44				70.44
76	M 48 DP			136.10				9.64	273.53				419.27

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
77	M 41			475.83				73.71	21.81				571.35
77	M 46			121.33					1.00				122.33
77	M 48 LM		314.42	1361.38				210.90					1886.70
77	M 48 DP			13.15				4.60					17.75
78	M 40		59.27	1358.43				128.99	176.98				1723.67
78	M 41			432.69				46.86	274.46				754.01
78	M 48 LM			67.74				18.44					86.18
79	M 40		203.06	321.82			1563.03	52.42	324.19		95.52		2560.04
79	M 50			18.24							4.10		22.34
80	M 40		283.86	40.42			482.14						806.42
80	M 50		598.07	18.97			724.11	35.42					1376.57
83	LDP 11	230.27	155.93	82.29	728.88				500.03	109.83		97.73	1904.96
84	LDP 11		515.19	696.03	318.36		80.23		107.29		38.84		1755.94
84	LDP 12			22.08	416.94			20.59	345.71				805.32
85	LDP 12		149.93	1586.21	120.52			72.37	647.93				2576.96
86	LDP 12			618.55				53.92	362.14				1034.61
86	CAL 12			164.23				14.41					178.64
86	M 48 LM		38.32	602.10				16.79	26.60				683.81
86	M 48 DP		1.78	122.01				30.40	381.84				536.03
87	CA 10		14.55	13.32									27.87
87	M 48 LM		227.73	1643.01					634.81				2505.55
87	M 48 DP			25.05					27.92				52.97
88	CA 10		5.43					5.34					10.77
88	M 40		45.28	1727.37				282.93	180.63				2236.21
88	M 48 LM		92.02	79.93					57.47				229.42
89	CA 7 W								4.62				4.62
89	CA 13			24.37									24.37
89	M 40		39.30	1776.81			36.05	95.21	555.75		87.97		2591.09
90	CA 7 Q			718.34			73.70	66.90	191.39				1050.33
90	CA 7 W			1.91				4.10					6.01
90	CA 34 A								10.90				10.90
90	M 40		20.05	1058.37			171.18	38.25	102.78				1390.63
90	M 50			171.15			2.38						173.53
91	CA 7 V			8.67					404.08				412.75
91	CA 34 A			363.83				12.68	47.57				424.08
91	CA 36				5.42			1.17	3.45				10.04
91	M 40			332.58			309.42	35.92	0.36				678.28
92	LDP 11								133.98				133.98
93	LDP 11	893.27	21.72						55.58			141.53	1112.10
93	LDP 16	882.18										59.11	941.29
94	LDP 11	1270.68			365.71	28.53			59.35			18.79	1743.06
94	LDP 16	659.41				122.89						23.46	805.76
95	LDP 11		126.81		865.29			73.48	12.75		12.50		1090.83
95	LDP 12			88.72	63.60				254.76		47.06		454.14

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
95	LDP 16		48.21		265.75		77.16						391.12
95	LDP 17				135.49			13.85	444.50	43.54			637.38
96	CAL 12			243.18				103.34		9.13	18.19		373.84
96	LDP 12		50.81	525.52	303.47		29.47	50.59		19.30			979.16
96	LDP 17			170.90				61.19	249.06				481.15
96	CAL 17		125.01	402.96				69.94	38.32				636.23
97	CAL 12		34.97		660.03		25.69	327.83					1048.52
97	CAL 17			1051.56			26.65	70.68					1148.89
97	CA 18 E-A			39.81			33.14	12.40					85.35
97	M 48 LM			311.96			24.69						336.65
98	CA 2		12.01	647.14				58.85					718.00
98	CA 10			7.82									7.82
98	CA 18 E-A		581.50	1001.95				138.44					1721.89
99	CA 10		123.75	1899.66				151.31	9.29	26.70			2210.71
99	CA 12			51.07				12.10		6.43			69.60
99	CA 13		40.27	189.82				37.08					267.17
99	CA 18 E-A			23.69									23.69
100	CA 7 Q			12.40					5.12				17.52
100	CA 7 W		9.86	140.86			7.42	52.78	30.41	6.78			248.11
100	CA 12			380.01				34.41		30.05			444.47
100	CA 13		107.02	1291.16			89.75	75.85	176.72	116.42			1856.92
101	CA 7 Q		163.13	1015.75				47.98	663.48	15.90			1906.24
101	CA 7 W		64.81	9.79			41.22	37.49	140.55	67.41			361.27
101	CA 34 A		10.03	165.11					1.62		5.53		182.29
101	M 40			1.18					15.85				17.03
102	CA 7 Q			270.72					250.25				520.97
102	CA 7 V		108.12	6.60					290.07			29.46	434.25
102	CA 32		155.97	49.14					90.64				295.75
102	CA 33			35.46					76.54				112.00
102	CA 34 A		12.69	429.62					415.75			31.08	889.14
102	CA 34 B			74.41					25.59				100.00
102	CA 36			105.25					25.71				130.96
102	M 40			14.95					18.55				33.50
106	LDP 15		528.31			35.05			241.98			28.65	833.99
106	LDP 16	629.95	140.76			357.82						20.73	1149.26
107	LDP 16	2041.34	96.33									447.16	2584.83
108	LDP 16	2083.63	322.28			36.82	56.74	41.50				64.70	2605.67
109	LDP 16	178.96	260.07	455.72		148.52	192.61	46.01	150.14			35.87	1467.90
109	CAL 17		63.75	21.28				6.27	86.94			14.85	193.09
109	LDP 17		295.67	155.84	255.05			43.97	198.76			8.95	958.24
110	LDP 17			250.66	62.42		21.92	35.27	75.54		22.50		468.31
110	CAL 17		553.54	542.93	455.83		49.46	161.19	244.36		51.63	18.45	2077.39
111	CAL 17		567.20	1019.72			71.69	30.60	418.88				2108.09
111	CA 18 E-A		101.83	200.59			13.89						316.31
112	CA 10		31.81	424.76									456.57
112	CAL 18		246.18										246.18

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
112	CA 18 E-A		319.48	1171.41	185.12			42.70	42.05				1760.76
113	CA 10			1339.79	222.40		23.88	53.98	180.64	65.49			1886.18
113	CA 12			587.68					61.49	4.88			654.05
114	CA 7 W			36.53					72.47				109.00
114	CA 11 B			407.03				48.40					455.43
114	CA 12			828.25				86.24					914.49
114	CA 13		80.45	602.30				117.14	286.53				1086.42
115	CA 7 Q		45.97	41.07					169.38	8.75		111.97	377.14
115	CA 7 W		602.30	10.32					213.01	159.25			984.88
115	CA 13								100.56				100.56
115	CA 29								205.44				205.44
115	CA 30		154.39						245.13			125.50	525.02
115	CA 31		275.94	12.60					410.66			122.09	821.29
116	CA 7 M			569.53								89.47	659.00
116	CA 7 Q			32.06					158.74				190.80
116	CA 28		436.38	243.00					204.25				883.63
116	CA 29		32.37						25.60				57.97
116	CA 30		76.93						143.42				220.35
116	CA 31			40.61					85.10				125.71
116	CA 32		13.22	537.32					13.71				564.25
116	CA 34 A			83.59									83.59
118	LDP 15		39.01										39.01
118	LDP 16	102.95	260.48			99.13						20.12	482.68
119	LDP 16	416.40	362.09		301.91	189.74						60.36	1330.50
120	LDP 16	972.28	553.77		361.73	589.61	49.47	49.08	142.24			57.08	2775.26
121	CAL 16				254.11	543.69		24.95					822.75
121	LDP 16				184.54	811.78		20.32	42.91				1059.55
121	CAL 17	154.99				659.00		23.74					837.73
121	LDP 17					1.92							1.92
122	CAL 17		896.08		1195.84	81.06	49.54	159.64	172.68		26.45	43.29	2624.58
123	CAL 17		111.52	708.90			44.79		1228.28		99.52	66.95	2259.96
123	CA 18 E-B			24.32					348.32			7.25	379.89
124	CA 5		30.02	89.42					72.88			8.68	201.00
124	CA 7		42.31	400.62				25.05	6.19			6.45	480.62
124	CA 8			73.15					15.94				89.09
124	CAL 17		226.90	199.35	116.38		42.37		208.70			5.78	799.48
124	CAL 18		293.01	36.39					245.74			22.01	597.15
124	CA 18 E-B		24.84	11.57					347.17			22.53	406.11
125	CA 7			180.54				47.73	27.90			4.21	260.38
125	CA 8		90.58	139.52					0.70		4.71	21.66	257.17
125	CA 9		10.84	128.10				0.29	54.87			8.90	203.00
125	CA 10		25.28	274.43					473.26		45.05	21.06	839.08
125	CA 11 A		98.02	341.69					55.04			0.45	495.20
125	CA 12			162.64					113.63				276.27
125	CA 15 A		207.47						67.04		2.66		277.17
125	CA 58		12.77						107.94		3.16		123.87
126	CA 7 W			0.91			5.44		381.71		5.88		393.94

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
126	CA 11 A			71.80									71.80
126	CA 11 B		40.73	347.84									388.57
126	CA 12		47.59	215.53									263.12
126	CA 13			150.26					240.30				390.56
126	CA 14			10.54			9.33		167.13				187.00
126	CA 15 A		118.26	83.31					273.92				475.49
126	CA 16		10.91	92.11			60.95		63.03				227.00
126	CA 17			46.33					105.79				152.12
126	CA 18								59.72				59.72
126	CA 25		46.88	16.83			126.17						189.88
126	CA 58			4.27					11.85				16.12
127	CA 7 W		1.11				0.74	8.74	297.24	81.34			389.17
127	CA 18		55.46										55.46
127	CA 20		15.94						32.41				48.35
127	CA 25		59.87					62.25					122.12
127	CA 26		156.48						183.81				340.29
127	CA 27								29.43				29.43
127	CA 29		153.50						299.44			21.48	474.42
127	CA 38		426.89					24.71	244.19	35.80			731.59
128	CA 20			6.51					151.94				158.45
128	CA 22		207.87	337.20					12.75				557.82
128	CA 26		20.45	127.46					97.80				245.71
128	CA 27		158.04	121.08					81.45				360.57
128	CA 28		421.62	0.85					22.90				445.37
128	CA 29								64.17				64.17
128	CA 30								20.63				20.63
129	LDP 16	275.49	56.31			135.86							
129	LDP 20		5.63		10.07	56.04			29.45			18.91	486.57
130	LDP 16	348.05	189.58		535.52		61.11	73.95	117.99			253.48	101.19
130	CAL 16				178.67								1579.68
130	CAL 20				119.92		71.78	94.03					178.67
130	LDP 20		70.70		276.63			86.94					285.73
131	LDP 16		70.71	239.19	38.03								434.27
131	CAL 16	39.25	299.23	0.89	402.77	169.44							347.93
131	CAL 17		276.06										911.58
131	CAL 20	4.31	258.76	10.33	45.93	37.85							276.06
131	CAL 21	391.25	131.04		38.19	18.51							357.18
132	CAL 17	1139.54			6.43								578.99
132	CAL 21	835.91	323.77	163.36	24.56	47.23							1145.97
133	CAL 17		163.21	114.06	390.65	92.57	52.65	25.14	352.22		18.48		1394.83
133	CAL 21		193.84	396.54	351.01	338.93		140.42	4.90				1208.98
134	CA 6		67.76	301.92	104.95			9.23	108.48		20.74		1425.64
134	CA 8		42.87						161.32				613.08
134	CAL 17		55.37	68.00	367.05				47.07		16.06		204.19
134	CAL 18		31.88		250.08				71.28		6.43		553.55
134	CAL 21		216.46	393.48	6.42			101.09			20.38		359.67
134	CAL 22		39.44								20.63		737.83
134	CA 39		3.08						6.74	15.41			60.07
134	CA 40		24.78	6.53									25.23
135	CA 6			38.05					29.87				31.31
135	CA 8		36.01	25.29					135.25				67.92
													196.55

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
135	CA 15 A								25.90				25.90
135	CA 39		155.75	205.29	111.62				346.85		51.26		870.77
135	CA 40		49.58	310.93				2.83	124.45				487.79
135	CA 41		2.56	226.22				54.00	38.24				321.02
135	CA 42 A			77.41				7.54					84.95
135	CA 42 B		30.64	60.81									91.45
135	CA 58		272.02	10.41					494.88		16.20		793.51
135	CA 62			2.30									2.30
136	CA 15 A			135.45					45.99				181.44
136	CA 15 B			64.04					14.96				79.00
136	CA 17			263.72					111.16				374.88
136	CA 18			20.40					129.43			29.77	179.60
136	CA 42 A			24.54					14.78				39.32
136	CA 42 B			409.75					74.80				484.55
136	CA 43 A			26.00									26.00
136	CA 43 B			14.75					29.25				44.00
136	CA 44			3.68					66.32				70.00
136	CA 45			77.17					57.83				135.00
136	CA 46								36.06				36.06
136	CA 47			8.56					5.06				13.62
136	CA 48			40.96					278.62				319.58
136	CA 51		36.44	249.56				24.20	72.50			17.86	400.56
136	CA 58								63.50				63.50
136	CA 62			211.12					21.58				232.70
137	CA 18			388.25			2.62	21.82	300.54	53.99			767.22
137	CA 19			536.64			37.03	47.58	143.20	16.19			780.64
137	CA 21			98.15					41.65				139.80
137	CA 38								210.65	7.76			218.41
137	CA 51			239.20		33.12	1.15	113.68		14.53			401.68
138	CA 19		54.27	277.33									331.60
138	CA 20			7.58					34.62				42.20
138	CA 21		259.57	136.92					99.71				496.20
138	CA 22		58.88	16.21					38.09				113.18
138	CA 23		391.41	50.50					110.60			50.49	603.00
138	CA 24		223.54	385.34				34.35	182.46				825.69
139	LDP 20	11.71							43.92				55.63
140	CAL 20		262.94	486.80	43.63				225.25				1018.62
140	LDP 20			27.59					0.32				27.91
141	CAL 20		138.35	808.17	105.90	21.55	121.12		130.09				1325.18
141	CAL 21		281.16	710.84			211.56	51.32					1254.88
142	CAL 21	80.21	702.43	962.43	307.53		39.66	119.41	308.97				2520.64
143	CAL 21	303.07	810.23	443.99	525.01			357.76	72.76	33.49		41.30	2587.61
144	CAL 21		336.89	238.97	692.25	74.76		87.05	303.56	102.72			1836.20
144	CAL 22		481.38	173.46	57.07	161.56		48.75	33.05	100.41			1055.68
144	CA 40		27.55	84.66									112.21
145	CAL 22			319.68		82.95		24.58	608.02				1035.23
145	CA 40			413.75		7.63		46.97	107.34				575.69
145	CA 41			109.55				34.43					143.98
145	CA 42 A			223.70				63.49	268.54				555.73
145	CA 57			306.32					17.68				324.00

SHEET #	BASIN #	FOREST	OPEN SPACE	RESIDENTIAL				COMMERCIAL	INDUSTRIAL	HIGHWAY		OPEN WATER	TOTAL
				HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI-FAMILY HIGH RISE			GRASS MEDIAN	NO MEDIAN		
146	CAL 22			206.57	44.53			94.19	969.06				1314.35
146	CA 45			6.11					15.89				22.00
146	CA 46			269.34				2.58	35.02				306.94
146	CA 47			12.75					27.63				40.38
146	CA 48			2.81					26.61				29.42
146	CA 49			79.70				45.50	47.67				172.87
146	CA 50			47.19					83.81				131.00
146	CA 51			23.24									23.24
147	CA 19		30.93	22.48					13.50				66.91
147	CA 51		15.14	152.18					12.46	2.74			182.52
147	CA 61			9.00									9.00
148	CA 19		59.40	14.24					14.21				87.85
148	CA 24		188.97	438.34									627.31
148	CA 53			10.64	37.53			24.83					73.00
148	CA 54			70.71				34.29					105.00
148	CA 55		25.99	135.65				20.36					182.00
148	CA 56		10.34	266.17				14.77	35.80				327.08
149	CAL 20		769.36	597.58					10.51				1377.45
150	CAL 20		368.44	542.14	80.26								990.84
150	CAL 21		312.47	178.33	113.08								603.88
151	CAL 21		265.89	401.04	159.32	148.59		58.53	28.85				1062.22
152	CAL 21		948.86	382.01	443.84	504.83			60.34	239.27			2579.15
152	CAL 24		23.90	10.55	10.60								45.05
153	CAL 21		157.72	606.95	68.51	154.43	2.00	134.06	12.25	47.21			1183.13
153	CAL 22		265.18	197.40	423.71	53.01		23.29	71.80	71.61			1106.00
153	CAL 24				108.21	73.50	18.03	29.09					228.83
154	CAL 22		527.84	670.57	317.10			128.45	700.48	69.01			2413.45
155	CAL 22		133.51	59.78					344.14	52.04			589.47
155	CA 49			44.98				49.15					94.13
156	CA 56			36.09				49.76					85.85
157	CA 56		136.57	1154.77				170.82	84.85	50.59			1597.60
158	CAL 21		3.01						6.99				10.00
158	CAL 24		115.09	177.72	205.23		40.55	18.86	6.94				564.39
159	CAL 22			112.03				23.13					135.16
159	CAL 24		406.30	319.78	248.33	75.47		128.85					1178.73
160	CAL 22			420.59									420.59
160	CAL 24			2.00									2.00
161	CA 56			83.47									83.47
													0.00
TOTALS		13945.10	34216.81	131988.49	22267.10	6044.70	15693.61	19926.40	56253.28	2083.80	2544.72	3412.99	308377.00

APPENDIX D

LAND USE AREAS IN ACRES
FOR EACH SCA AND UNGAGED PARTITION

BASIN	FOREST	OPEN AREA	HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI FAMILY	COMMERCIAL	INDUSTRIAL	HIGHWAY GRASS MED.	HIGHWAY NO MED.	OPEN WATER	TOTAL
CA 2	0.00	12.01	647.14	0.00	0.00	0.00	58.85	0.00	0.00	0.00	0.00	718.00
CA 5	0.00	30.02	89.42	0.00	0.00	0.00	0.00	72.88	0.00	0.00	8.68	201.00
CA 6	0.00	67.76	339.97	104.95	0.00	0.00	9.23	138.35	0.00	20.74	0.00	681.00
CA 7	0.00	42.31	581.16	0.00	0.00	0.00	72.78	34.09	0.00	0.00	10.66	741.00
CA 7 M	0.00	0.00	569.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	89.47	659.00
CA 7 Q	0.00	209.10	2090.34	0.00	0.00	73.70	114.88	1438.36	24.65	0.00	111.97	4063.00
CA 7 V	0.00	108.12	15.27	0.00	0.00	0.00	0.00	694.15	0.00	0.00	29.46	847.00
CA 7 W	0.00	678.08	200.32	0.00	0.00	54.82	103.11	1140.01	314.78	5.88	0.00	2497.00
CA 8	0.00	169.46	237.96	0.00	0.00	0.00	0.00	313.21	0.00	4.71	21.66	747.00
CA 9	0.00	10.84	128.10	0.00	0.00	0.00	0.29	54.87	0.00	0.00	8.90	203.00
CA 10	0.00	200.82	3959.78	222.40	0.00	23.88	210.63	663.19	92.19	45.05	21.06	5439.00
CA 11 A	0.00	98.02	413.49	0.00	0.00	0.00	0.00	55.04	0.00	0.00	0.45	567.00
CA 11 B	0.00	40.73	754.87	0.00	0.00	0.00	48.40	0.00	0.00	0.00	0.00	844.00
CA 12	0.00	47.59	2225.18	0.00	0.00	0.00	132.75	175.12	41.36	0.00	0.00	2622.00
CA 13	0.00	227.74	2257.91	0.00	0.00	89.75	230.07	804.11	116.42	0.00	0.00	3726.00
CA 14	0.00	0.00	10.54	0.00	0.00	9.33	0.00	167.13	0.00	0.00	0.00	187.00
CA 15 A	0.00	325.73	218.76	0.00	0.00	0.00	0.00	412.85	0.00	2.66	0.00	960.00
CA 15 B	0.00	0.00	64.04	0.00	0.00	0.00	0.00	14.96	0.00	0.00	0.00	79.00
CA 16	0.00	10.91	92.11	0.00	0.00	60.95	0.00	63.03	0.00	0.00	0.00	227.00
CA 17	0.00	0.00	310.05	0.00	0.00	0.00	0.00	216.95	0.00	0.00	0.00	527.00
CA 18	0.00	55.46	408.65	0.00	0.00	2.62	21.82	489.69	53.99	0.00	29.77	1062.00
CA 18 E-A	0.00	1002.81	2437.45	185.12	0.00	47.03	193.54	42.05	0.00	0.00	0.00	3908.00
CA 18 E-B	0.00	24.84	35.89	0.00	0.00	0.00	0.00	695.49	0.00	0.00	29.78	786.00
CA 19	0.00	144.60	850.69	0.00	0.00	37.03	47.58	170.91	16.19	0.00	0.00	1267.00
CA 20	0.00	15.94	14.09	0.00	0.00	0.00	0.00	218.97	0.00	0.00	0.00	249.00
CA 21	0.00	259.57	235.07	0.00	0.00	0.00	0.00	141.36	0.00	0.00	0.00	636.00
CA 22	0.00	266.75	353.41	0.00	0.00	0.00	0.00	50.84	0.00	0.00	0.00	671.00
CA 23	0.00	391.41	50.50	0.00	0.00	0.00	0.00	110.60	0.00	0.00	50.49	603.00
CA 24	0.00	412.51	823.68	0.00	0.00	0.00	34.35	182.46	0.00	0.00	0.00	1453.00
CA 25	0.00	106.75	16.83	0.00	0.00	126.17	62.25	0.00	0.00	0.00	0.00	312.00
CA 26	0.00	176.93	127.46	0.00	0.00	0.00	0.00	281.61	0.00	0.00	0.00	586.00
CA 27	0.00	158.04	121.08	0.00	0.00	0.00	0.00	110.88	0.00	0.00	0.00	390.00
CA 28	0.00	858.00	243.85	0.00	0.00	0.00	0.00	227.15	0.00	0.00	0.00	1329.00
CA 29	0.00	185.87	0.00	0.00	0.00	0.00	0.00	594.65	0.00	0.00	21.48	802.00
CA 30	0.00	231.32	0.00	0.00	0.00	0.00	0.00	409.18	0.00	0.00	125.50	766.00
CA 31	0.00	275.94	53.21	0.00	0.00	0.00	0.00	495.76	0.00	0.00	122.09	947.00
CA 32	0.00	169.19	586.46	0.00	0.00	0.00	0.00	104.35	0.00	0.00	0.00	860.00

BASIN	FOREST	OPEN AREA	HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI FAMILY	COMMERCIAL	INDUSTRIAL	HIGHWAY GRASS MED.	HIGHWAY NO MED.	OPEN WATER	TOTAL
CA 33	0.00	0.00	35.46	0.00	0.00	0.00	0.00	76.54	0.00	0.00	0.00	112.00
CA 34 A	0.00	22.72	1042.15	0.00	0.00	0.00	12.68	475.84	0.00	5.53	31.08	1590.00
CA 34 B	0.00	0.00	74.41	0.00	0.00	0.00	0.00	25.59	0.00	0.00	0.00	100.00
CA 36	0.00	0.00	105.25	5.42	0.00	0.00	1.17	29.16	0.00	0.00	0.00	141.00
CA 38	0.00	426.89	0.00	0.00	0.00	0.00	24.71	454.84	43.56	0.00	0.00	950.00
CA 39	0.00	158.83	205.29	111.62	0.00	0.00	0.00	353.59	15.41	51.26	0.00	896.00
CA 40	0.00	101.91	815.87	0.00	7.63	0.00	49.80	231.79	0.00	0.00	0.00	1207.00
CA 41	0.00	2.56	335.77	0.00	0.00	0.00	88.43	38.24	0.00	0.00	0.00	465.00
CA 42 A	0.00	0.00	325.65	0.00	0.00	0.00	71.03	283.32	0.00	0.00	0.00	680.00
CA 42 B	0.00	30.64	470.56	0.00	0.00	0.00	0.00	74.80	0.00	0.00	0.00	576.00
CA 43 A	0.00	0.00	26.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.00
CA 43 B	0.00	0.00	14.75	0.00	0.00	0.00	0.00	29.25	0.00	0.00	0.00	44.00
CA 44	0.00	0.00	3.68	0.00	0.00	0.00	0.00	66.32	0.00	0.00	0.00	70.00
CA 45	0.00	0.00	83.28	0.00	0.00	0.00	0.00	73.72	0.00	0.00	0.00	157.00
CA 46	0.00	0.00	269.34	0.00	0.00	0.00	2.58	71.08	0.00	0.00	0.00	343.00
CA 47	0.00	0.00	21.31	0.00	0.00	0.00	0.00	32.69	0.00	0.00	0.00	54.00
CA 48	0.00	0.00	43.77	0.00	0.00	0.00	0.00	305.23	0.00	0.00	0.00	349.00
CA 49	0.00	0.00	124.68	0.00	0.00	0.00	94.65	47.67	0.00	0.00	0.00	267.00
CA 50	0.00	0.00	47.19	0.00	0.00	0.00	0.00	83.81	0.00	0.00	0.00	131.00
CA 51	0.00	51.58	664.18	0.00	33.12	1.15	137.88	84.96	17.27	0.00	17.86	1008.00
CA 53	0.00	0.00	10.64	37.53	0.00	0.00	24.83	0.00	0.00	0.00	0.00	73.00
CA 54	0.00	0.00	70.71	0.00	0.00	0.00	34.29	0.00	0.00	0.00	0.00	105.00
CA 55	0.00	25.99	135.65	0.00	0.00	0.00	20.36	0.00	0.00	0.00	0.00	182.00
CA 56	0.00	146.91	1540.50	0.00	0.00	0.00	235.35	120.65	50.59	0.00	0.00	2094.00
CA 57	0.00	0.00	306.32	0.00	0.00	0.00	0.00	17.68	0.00	0.00	0.00	324.00
CA 58	0.00	284.79	14.68	0.00	0.00	0.00	0.00	678.17	0.00	19.36	0.00	997.00
CA 61	0.00	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00
CA 62	0.00	0.00	213.42	0.00	0.00	0.00	0.00	21.58	0.00	0.00	0.00	235.00
DP 1	0.00	0.00	213.36	0.00	0.00	17.80	49.84	0.00	0.00	0.00	0.00	281.00
DP 2 A	0.00	0.00	72.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	72.00
DP 2 B	0.00	0.00	276.46	70.16	0.00	0.00	43.75	0.00	6.63	0.00	0.00	397.00
DP 3	0.00	0.00	169.00	0.00	0.00	0.00	27.00	0.00	0.00	0.00	0.00	196.00
DP 4	0.00	0.00	23.67	120.76	0.00	0.00	7.21	213.36	0.00	0.00	0.00	365.00
DP 5	0.00	125.18	436.27	486.50	51.31	0.00	116.74	0.00	0.00	0.00	0.00	1216.00
DP 6	0.00	18.89	415.63	117.97	0.00	35.20	117.31	0.00	0.00	0.00	0.00	705.00
DP 7	0.00	46.70	609.20	221.43	0.00	0.00	77.67	0.00	0.00	0.00	0.00	955.00
DP 8	0.00	0.00	201.58	126.33	0.00	0.00	94.09	0.00	0.00	0.00	0.00	422.00

BASIN	FOREST	OPEN AREA	HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI FAMILY	COMMERCIAL	INDUSTRIAL	HIGHWAY GRASS MED.	HIGHWAY NO MED.	OPEN WATER	TOTAL
DP 9	0.00	0.00	253.23	233.19	0.00	194.12	64.02	0.00	5.44	0.00	0.00	750.00
DP 10	0.00	0.00	154.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	154.00
DP 11	0.00	14.64	855.14	0.00	0.00	27.81	52.41	0.00	0.00	0.00	0.00	950.00
DP 12	0.00	0.00	120.71	0.00	0.00	0.00	89.29	0.00	0.00	0.00	0.00	210.00
DP 13	0.00	0.00	103.90	0.00	0.00	0.00	19.72	31.38	0.00	0.00	0.00	155.00
DP 14	0.00	0.00	316.98	0.00	0.00	0.00	11.81	175.21	0.00	0.00	0.00	504.00
DP 15	0.00	3.60	309.83	0.00	0.00	0.00	0.97	72.60	0.00	0.00	0.00	387.00
DP 16	0.00	4.58	129.20	0.00	0.00	0.00	0.00	11.22	0.00	0.00	0.00	145.00
DP 17 A	0.00	36.34	135.27	0.00	0.00	0.00	3.39	0.00	0.00	0.00	0.00	175.00
DP 17 B	0.00	0.00	41.93	205.68	0.00	0.00	48.24	145.15	0.00	0.00	0.00	441.00
DP 18	0.00	0.00	162.90	53.76	0.00	0.00	0.00	0.00	0.00	0.00	36.34	253.00
DP 19	0.00	0.00	1170.61	0.00	0.00	0.00	108.39	0.00	0.00	0.00	0.00	1279.00
DP 20	0.00	0.00	0.00	0.00	0.00	0.00	78.37	86.63	0.00	0.00	0.00	165.00
DP 21	0.00	16.03	309.70	0.00	0.00	69.17	30.10	244.00	0.00	0.00	0.00	669.00
DP 22	0.00	0.00	44.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.00
DP 23	0.00	56.06	183.01	0.00	0.00	18.63	53.30	0.00	0.00	0.00	0.00	311.00
DP 24	0.00	0.00	77.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	77.00
DP 25 AB	0.00	0.00	80.00	0.00	0.00	0.00	30.00	0.00	0.00	0.00	0.00	110.00
DP 26	0.00	9.86	145.45	156.60	0.00	0.00	16.97	40.12	0.00	0.00	0.00	369.00
DP 27	0.00	14.35	274.57	0.00	0.00	10.47	0.00	24.61	0.00	0.00	0.00	324.00
DP 28	0.00	0.00	151.35	0.00	0.00	123.42	17.68	19.55	0.00	0.00	0.00	312.00
DP 29	0.00	0.00	139.86	0.00	0.00	0.00	0.00	4.14	0.00	0.00	0.00	144.00
DP 30	0.00	17.20	261.78	0.00	0.00	0.00	38.14	3.69	0.00	14.19	0.00	335.00
DP 31	0.00	0.00	311.54	0.00	0.00	22.46	0.00	0.00	0.00	0.00	0.00	334.00
DP 32	0.00	0.68	139.52	0.00	0.00	0.00	0.00	0.00	0.00	19.80	0.00	160.00
DP 33	0.00	33.52	392.82	0.00	0.00	0.00	0.00	0.00	0.00	25.66	0.00	452.00
DP 34	0.00	0.00	438.37	0.00	0.00	0.00	40.34	13.29	0.00	0.00	0.00	492.00
DP 35	0.00	0.00	281.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	281.00
DP 36	0.00	48.42	161.89	0.00	0.00	24.00	0.00	24.69	0.00	0.00	0.00	259.00
DP 37	0.00	0.00	112.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	112.00
DP 38	0.00	0.00	555.52	43.55	0.00	59.69	39.62	1.62	0.00	0.00	0.00	700.00
DP 39	0.00	0.00	265.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	265.00
DP 40	0.00	0.00	131.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	131.00
DP 41	0.00	0.00	54.62	344.54	0.00	0.00	17.84	0.00	0.00	0.00	0.00	417.00
DP 42	0.00	2.85	0.00	100.44	0.00	0.00	0.71	0.00	0.00	0.00	0.00	104.00
DP 43	0.00	0.00	1.35	188.17	0.00	0.00	32.48	0.00	0.00	0.00	0.00	222.00
DP 44	0.00	0.00	7.81	199.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	207.00

BASIN	FOREST	OPEN AREA	HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI FAMILY	COMMERCIAL	INDUSTRIAL	HIGHWAY GRASS MED.	HIGHWAY NO MED.	OPEN WATER	TOTAL
DP 45	0.00	0.00	41.93	53.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	95.00
DP 46	0.00	0.00	184.86	0.00	0.00	0.00	0.00	33.14	0.00	0.00	0.00	218.00
DP 47	0.00	0.00	17.75	17.85	0.00	0.00	0.40	0.00	0.00	0.00	0.00	36.00
DP 48	0.00	0.00	0.00	0.00	0.00	0.00	25.33	16.67	0.00	0.00	0.00	42.00
DP 49	0.00	10.60	300.60	15.41	0.00	0.00	62.39	0.00	0.00	0.00	0.00	389.00
DP 50	0.00	49.75	102.31	0.00	0.00	0.00	17.21	2.73	0.00	0.00	0.00	172.00
DP 51	0.00	0.00	195.94	0.00	0.00	0.00	21.06	0.00	0.00	0.00	0.00	217.00
DP 52	0.00	0.00	405.53	215.41	0.00	0.00	0.00	130.06	0.00	0.00	0.00	751.00
DP 53	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	150.00
DP 54	0.00	0.00	153.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	153.00
DP 55	0.00	0.00	400.98	0.00	0.00	0.00	41.02	0.00	0.00	0.00	0.00	442.00
DP 56	0.00	0.00	150.03	0.00	0.00	0.00	0.00	0.00	0.00	0.97	0.00	151.00
DP 62	0.00	0.00	0.00	39.83	0.00	0.00	11.17	0.00	0.00	0.00	0.00	51.00
DP 63	0.00	11.37	0.00	409.30	0.00	12.28	40.05	0.00	0.00	0.00	0.00	473.00
DP 64	0.00	0.00	39.24	0.00	0.00	0.00	6.21	4.55	0.00	0.00	0.00	50.00
DP 65	0.00	42.64	205.92	0.00	0.00	0.00	0.00	0.00	0.00	3.44	0.00	252.00
DP 66	0.00	0.00	0.00	25.67	0.00	0.00	11.33	0.00	0.00	0.00	0.00	37.00
M 1	0.00	0.00	2495.20	131.01	0.00	0.00	226.09	0.00	0.00	0.00	66.70	2919.00
M 2	0.00	88.55	974.76	231.39	0.00	911.25	369.08	78.93	0.00	0.00	129.04	2783.00
M 3	0.00	0.00	632.75	0.00	0.00	35.65	23.88	312.48	0.00	0.00	83.24	1088.00
M 4	0.00	471.65	2797.53	121.32	0.00	107.92	489.43	314.62	0.00	90.53	0.00	4393.00
M 5	0.00	117.26	1053.15	0.00	0.00	606.33	260.94	4.07	0.00	0.00	142.25	2184.00
M 6	0.00	128.41	1430.39	504.00	0.00	8.41	379.98	809.66	12.03	81.12	0.00	3354.00
M 7	0.00	290.64	562.55	0.00	0.00	0.00	127.59	0.00	0.00	0.00	21.22	1002.00
M 8	0.00	180.41	523.52	0.00	0.00	0.00	164.05	158.96	0.00	0.00	18.06	1045.00
M 9	0.00	933.71	1576.22	0.00	0.00	2297.50	299.98	154.56	37.16	55.01	7.86	5362.00
M 10 A	0.00	187.00	2212.31	0.00	0.00	0.00	438.17	170.29	4.09	93.50	3.64	3109.00
M 10 B	0.00	117.57	1022.59	0.00	0.00	0.00	278.24	16.76	0.00	29.84	0.00	1465.00
M 11	0.00	13.12	683.78	0.00	0.00	85.20	229.84	22.68	0.00	0.00	29.38	1064.00
M 12	0.00	0.00	171.60	0.00	0.00	0.00	42.03	5.37	0.00	0.00	0.00	219.00
M 13	0.00	0.00	397.64	0.00	0.00	0.00	227.22	86.05	0.00	0.00	9.09	720.00
M 14	0.00	35.99	417.43	0.00	0.00	0.00	158.08	78.34	0.00	1.16	0.00	691.00
M 15	0.00	0.00	745.40	0.00	0.00	118.96	313.19	152.94	0.00	0.00	34.51	1365.00
M 16	0.00	148.75	4151.05	0.00	0.00	0.00	686.05	397.93	0.00	32.22	0.00	5416.00
M 17	0.00	0.00	368.21	0.00	0.00	35.80	39.51	105.32	0.00	73.00	4.16	626.00
M 18	0.00	16.81	1450.10	0.00	0.00	16.32	147.03	416.71	36.68	23.35	0.00	2107.00
M 19	0.00	19.08	91.06	443.74	0.00	148.33	78.41	118.89	0.00	0.00	22.49	922.00

BASIN	FOREST	OPEN AREA	HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI FAMILY	COMMERCIAL	INDUSTRIAL	HIGHWAY GRASS MED.	HIGHWAY NO MED.	OPEN WATER	TOTAL
M 20	0.00	7.25	1299.42	0.00	0.00	0.00	112.28	112.60	31.44	9.01	0.00	1572.00
M 21	0.00	35.63	153.31	0.00	0.00	217.74	451.72	197.51	0.00	29.68	24.41	1110.00
M 22	0.00	0.00	23.70	0.00	0.00	0.00	0.00	98.56	0.00	3.74	0.00	126.00
M 23	0.00	202.47	1221.18	0.00	0.00	0.00	81.28	229.93	0.00	11.14	0.00	1746.00
M 24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	102.04	0.00	0.00	6.96	109.00
M 25	0.00	1143.24	209.22	15.32	0.00	0.00	45.36	0.00	0.00	21.86	0.00	1435.00
M 27	0.00	0.00	676.28	0.00	0.00	0.00	16.27	71.42	0.00	11.03	2.00	777.00
M 28	0.00	0.00	0.00	0.00	0.00	20.77	25.10	281.12	0.00	8.91	26.10	362.00
M 29	0.00	11.80	294.42	0.00	0.00	14.87	147.11	311.98	0.00	65.82	0.00	846.00
M 30	0.00	10.77	611.74	0.00	0.00	67.62	0.00	81.49	0.00	25.99	13.39	811.00
M 31	0.00	0.00	0.00	0.00	0.00	0.00	278.23	8.18	0.00	0.00	51.59	338.00
M 32	0.00	5.06	62.05	0.00	0.00	287.48	467.17	186.75	0.00	13.49	0.00	1022.00
M 33	0.00	0.00	0.00	0.00	0.00	0.00	140.08	222.59	0.00	18.71	10.62	392.00
M 34	0.00	149.38	752.23	0.00	0.00	463.34	814.65	791.54	0.00	222.16	25.70	3219.00
M 35	0.00	0.00	98.08	0.00	0.00	135.59	182.74	509.51	0.00	81.72	4.36	1012.00
M 36	0.00	68.38	854.52	114.58	0.00	259.16	361.58	602.51	0.00	115.03	19.24	2395.00
M 37	0.00	19.28	462.98	13.39	0.00	7.99	0.00	656.11	0.00	5.60	29.65	1195.00
M 38	0.00	0.00	37.48	0.00	0.00	0.00	1.43	199.08	0.00	16.77	13.24	268.00
M 39	0.00	8.28	324.43	0.00	0.00	0.00	51.90	189.82	0.00	8.57	0.00	583.00
M 40	0.00	851.58	7507.40	0.00	0.00	3107.57	633.72	1968.24	0.00	183.49	0.00	14252.00
M 41	0.00	65.27	2638.06	0.00	0.00	0.00	246.62	2094.40	0.00	44.65	0.00	5089.00
M 42	0.00	162.99	456.44	7.79	0.00	78.67	160.20	492.76	0.00	5.15	0.00	1364.00
M 43	0.00	55.13	822.25	0.00	0.00	141.73	44.21	475.14	0.00	22.54	0.00	1561.00
M 44	0.00	120.64	0.00	0.00	0.00	0.00	181.51	0.00	0.00	15.53	20.32	338.00
M 45	0.00	0.00	530.24	0.00	0.00	15.42	2.29	380.21	0.00	13.70	35.14	977.00
M 46	0.00	0.00	967.24	282.18	0.00	15.42	73.81	1232.64	10.41	13.70	38.60	2634.00
M 47	0.00	33.29	1644.24	0.00	0.00	141.48	64.28	1320.63	0.00	63.08	0.00	3267.00
M 48 DP	0.00	1.78	303.29	0.00	0.00	0.00	44.64	683.29	0.00	0.00	0.00	1033.00
M 48 LM	0.00	672.49	5581.96	0.00	0.00	71.00	474.58	1857.99	32.54	0.00	17.44	8708.00
M 49 A	0.00	0.00	509.10	0.00	0.00	0.00	36.56	749.52	73.60	0.00	34.22	1403.00
M 49 BDP	0.00	0.00	1067.52	0.00	0.00	0.00	71.59	278.89	0.00	0.00	0.00	1418.00
M 49 BLM	0.00	0.00	451.24	0.00	0.00	0.00	56.32	70.44	0.00	0.00	0.00	578.00
M 50	0.00	837.45	622.45	87.11	0.00	3359.39	198.51	1101.09	0.00	266.59	5.41	6478.00
M 51	0.00	454.52	7696.70	179.62	0.00	340.17	997.05	1516.10	0.00	64.80	51.04	11300.00
M 52	0.00	60.77	2118.90	0.00	0.00	0.00	438.87	1800.70	0.00	24.84	5.92	4450.00
M 53	0.00	219.07	1859.34	236.56	0.00	0.00	135.92	162.11	0.00	0.00	0.00	2613.00
M 55 A	0.00	0.00	412.47	0.00	0.00	0.00	0.00	550.89	0.00	0.00	24.64	988.00

BASIN	FOREST	OPEN AREA	HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI FAMILY	COMMERCIAL	INDUSTRIAL	HIGHWAY GRASS MED.	HIGHWAY NO MED.	OPEN WATER	TOTAL
M 55 B	0.00	0.00	55.64	0.00	0.00	0.00	0.00	2007.93	0.00	0.00	7.43	2071.00
MN 1 A	0.00	0.00	302.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	302.00
MN 1 B	0.00	376.70	759.50	28.04	0.00	0.00	251.76	0.00	0.00	0.00	0.00	1416.00
MN 1 C	0.00	0.00	1166.58	199.78	0.00	0.00	279.63	0.00	122.01	0.00	0.00	1768.00
MN 1 D	0.00	21.01	417.99	0.00	0.00	0.00	14.62	90.38	0.00	0.00	0.00	544.00
MN 1 E	0.00	22.54	479.53	0.00	0.00	0.00	64.47	30.10	16.49	26.87	0.00	640.00
MN 2 A	0.00	0.00	0.00	265.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	265.00
MN 2 B	0.00	6.95	320.89	269.40	0.00	0.00	54.30	12.55	0.00	4.91	0.00	669.00
MN 2 C	0.00	0.00	0.00	428.97	0.00	0.00	0.00	7.44	0.00	27.59	0.00	464.00
MN 3	0.00	142.85	128.69	105.83	0.00	0.00	10.48	916.21	11.31	0.63	0.00	1316.00
MN 4	0.00	131.57	1077.52	62.33	0.00	0.00	111.58	0.00	0.00	0.00	0.00	1383.00
MN 5	0.00	0.00	685.54	0.00	0.00	14.22	0.00	234.77	0.00	13.47	0.00	948.00

APPENDIX D UNGAGED AREAS

BASIN	FOREST	OPEN AREA	HIGH DENSITY	MEDIUM DENSITY	LOW DENSITY	MULTI FAMILY	COMMERCIAL	INDUSTRIAL	HIGHWAY GRASS MED.	HIGHWAY NO MED.	OPEN WATER	TOTAL
CAL 12	0.00	34.97	407.41	660.03	0.00	25.69	445.58	0.00	9.13	18.19	0.00	1601.00
CAL 16	39.25	299.23	0.89	835.55	713.13	0.00	24.95	0.00	0.00	0.00	0.00	1913.00
CAL 17	1294.53	3038.64	4128.76	2532.18	832.63	337.15	547.20	2797.45	0.00	212.14	149.32	15870.00
CAL 18	0.00	571.07	36.39	250.08	0.00	0.00	0.00	317.02	0.00	6.43	22.01	1203.00
CAL 20	4.31	1797.85	2445.02	395.64	59.40	192.90	94.03	365.85	0.00	0.00	0.00	5355.00
CAL 21	1610.44	4683.77	4877.94	2729.72	1287.28	253.22	1049.64	798.62	422.69	20.38	41.30	17775.00
CAL 22	0.00	1447.35	2160.08	842.41	297.52	0.00	342.39	2726.55	293.07	20.63	0.00	8130.00
CAL 24	0.00	545.29	510.05	572.37	148.97	58.58	176.80	6.94	0.00	0.00	0.00	2019.00
LDP 9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00	9.00
LDP 11	2394.22	819.65	778.32	2278.24	28.53	80.23	73.48	1533.54	109.83	51.34	305.62	8453.00
LDP 12	0.00	200.74	2841.08	904.53	0.00	29.47	197.47	2316.35	19.30	47.06	0.00	6556.00
LDP 15	0.00	567.32	0.00	0.00	35.05	0.00	0.00	241.98	0.00	0.00	28.65	873.00
LDP 16	8590.64	2360.59	694.91	1687.48	2492.17	437.09	230.86	453.28	0.00	0.00	1060.98	18008.00
LDP 17	0.00	295.67	577.40	452.96	1.92	21.92	154.28	967.86	43.54	22.50	8.95	2547.00
LDP 20	11.71	76.33	27.59	286.70	56.04	0.00	86.94	73.69	0.00	0.00	0.00	619.00

APPENDIX E

LAND COVER RESULTS
FOR EACH SCA AND UNGAGED PARTITION

BASIN	ACRES IMPERV.	ACRES GRASS	ACRES FOREST	PERCENT IMPERV.	PERCENT GRASS	PERCENT FOREST
CA 2	413.02	304.98	0.00	57.52%	42.48%	0.00%
CA 5	112.73	88.27	0.00	56.08%	43.92%	0.00%
CA 6	359.80	321.20	0.00	52.83%	47.17%	0.00%
CA 7	424.63	316.37	0.00	57.31%	42.69%	0.00%
CA 7 M	408.41	250.59	0.00	61.97%	38.03%	0.00%
CA 7 Q	2490.20	1572.80	0.00	61.29%	38.71%	0.00%
CA 7 V	543.21	303.79	0.00	64.13%	35.87%	0.00%
CA 7 W	1255.00	1242.00	0.00	50.26%	49.74%	0.00%
CA 8	392.67	354.33	0.00	52.57%	47.43%	0.00%
CA 9	120.93	82.07	0.00	59.57%	40.43%	0.00%
CA 10	3092.92	2346.08	0.00	56.87%	43.13%	0.00%
CA 11 A	276.53	290.47	0.00	48.77%	51.23%	0.00%
CA 11 B	465.90	378.10	0.00	55.20%	44.80%	0.00%
CA 12	1508.08	1113.92	0.00	57.52%	42.48%	0.00%
CA 13	2171.37	1554.63	0.00	58.28%	41.72%	0.00%
CA 14	132.77	54.23	0.00	71.00%	29.00%	0.00%
CA 15 A	438.17	521.83	0.00	45.64%	54.36%	0.00%
CA 15 B	46.63	32.37	0.00	59.03%	40.97%	0.00%
CA 16	140.17	86.83	0.00	61.75%	38.25%	0.00%
CA 17	329.83	197.17	0.00	62.59%	37.41%	0.00%
CA 18	661.34	400.66	0.00	62.27%	37.73%	0.00%
CA 18 E-A	1716.87	2191.13	0.00	43.93%	56.07%	0.00%
CA 18 E-B	551.87	234.13	0.00	70.21%	29.79%	0.00%
CA 19	681.13	585.87	0.00	53.76%	46.24%	0.00%
CA 20	166.35	82.65	0.00	66.81%	33.19%	0.00%
CA 21	246.40	389.60	0.00	38.74%	61.26%	0.00%
CA 22	247.85	423.15	0.00	36.94%	63.06%	0.00%
CA 23	177.97	425.03	0.00	29.51%	70.49%	0.00%
CA 24	642.46	810.55	0.00	44.22%	55.78%	0.00%
CA 25	155.99	156.01	0.00	50.00%	50.00%	0.00%
CA 26	282.98	303.02	0.00	48.29%	51.71%	0.00%
CA 27	155.54	234.46	0.00	39.88%	60.12%	0.00%
CA 28	343.00	986.00	0.00	25.81%	74.19%	0.00%
CA 29	458.92	343.08	0.00	57.22%	42.78%	0.00%
CA 30	431.68	334.32	0.00	56.35%	43.65%	0.00%
CA 31	522.63	424.37	0.00	55.19%	44.81%	0.00%
CA 32	412.01	447.99	0.00	47.91%	52.09%	0.00%

BASIN	ACRES IMPERV.	ACRES GRASS	ACRES FOREST	PERCENT IMPERV.	PERCENT GRASS	PERCENT FOREST
CA 33	74.97	37.03	0.00	66.93%	33.07%	0.00%
CA 34 A	973.63	616.37	0.00	61.23%	38.77%	0.00%
CA 34 B	60.09	39.91	0.00	60.09%	39.91%	0.00%
CA 36	83.10	57.90	0.00	58.93%	41.07%	0.00%
CA 38	391.61	558.39	0.00	41.22%	58.78%	0.00%
CA 39	470.85	425.15	0.00	52.55%	47.45%	0.00%
CA 40	672.65	534.35	0.00	55.73%	44.27%	0.00%
CA 41	290.86	174.14	0.00	62.55%	37.45%	0.00%
CA 42 A	446.73	233.27	0.00	65.70%	34.30%	0.00%
CA 42 B	318.90	257.10	0.00	55.36%	44.64%	0.00%
CA 43 A	14.56	11.44	0.00	56.00%	44.00%	0.00%
CA 43 B	29.32	14.68	0.00	66.64%	33.36%	0.00%
CA 44	49.81	20.19	0.00	71.16%	28.84%	0.00%
CA 45	99.72	57.28	0.00	63.51%	36.49%	0.00%
CA 46	204.20	138.80	0.00	59.53%	40.47%	0.00%
CA 47	35.47	18.53	0.00	65.69%	34.31%	0.00%
CA 48	244.28	104.72	0.00	69.99%	30.01%	0.00%
CA 49	184.60	82.40	0.00	69.14%	30.86%	0.00%
CA 50	86.77	44.23	0.00	66.24%	33.76%	0.00%
CA 51	586.48	421.52	0.00	58.18%	41.82%	0.00%
CA 53	42.08	30.92	0.00	57.64%	42.36%	0.00%
CA 54	68.74	36.26	0.00	65.47%	34.53%	0.00%
CA 55	94.57	87.43	0.00	51.96%	48.04%	0.00%
CA 56	1182.24	911.76	0.00	56.46%	43.54%	0.00%
CA 57	184.27	139.73	0.00	56.87%	43.13%	0.00%
CA 58	526.23	470.77	0.00	52.78%	47.22%	0.00%
CA 61	5.04	3.96	0.00	56.00%	44.00%	0.00%
CA 62	135.05	99.95	0.00	57.47%	42.53%	0.00%
DP 1	174.31	106.69	0.00	62.03%	37.97%	0.00%
DP 2 A	40.32	31.68	0.00	56.00%	44.00%	0.00%
DP 2 B	223.38	173.62	0.00	56.27%	43.73%	0.00%
DP 3	117.59	78.41	0.00	59.99%	40.01%	0.00%
DP 4	221.31	143.69	0.00	60.63%	39.37%	0.00%
DP 5	554.15	661.85	0.00	45.57%	54.43%	0.00%
DP 6	405.24	299.76	0.00	57.48%	42.52%	0.00%
DP 7	498.08	456.92	0.00	52.15%	47.85%	0.00%
DP 8	243.39	178.61	0.00	57.68%	42.32%	0.00%

BASIN	ACRES IMPERV.	ACRES GRASS	ACRES FOREST	PERCENT IMPERV.	PERCENT GRASS	PERCENT FOREST
DP 9	428.11	321.89	0.00	57.08%	42.92%	0.00%
DP 10	86.24	67.76	0.00	56.00%	44.00%	0.00%
DP 11	543.63	406.37	0.00	57.22%	42.78%	0.00%
DP 12	143.49	66.51	0.00	68.33%	31.67%	0.00%
DP 13	97.54	57.46	0.00	62.93%	37.07%	0.00%
DP 14	313.70	190.30	0.00	62.24%	37.76%	0.00%
DP 15	226.78	160.22	0.00	58.60%	41.40%	0.00%
DP 16	80.66	64.34	0.00	55.63%	44.37%	0.00%
DP 17 A	80.45	94.55	0.00	45.97%	54.03%	0.00%
DP 17 B	251.26	189.74	0.00	56.98%	43.02%	0.00%
DP 18	149.07	103.93	0.00	58.92%	41.08%	0.00%
DP 19	747.67	531.33	0.00	58.46%	41.54%	0.00%
DP 20	128.99	36.01	0.00	78.17%	21.83%	0.00%
DP 21	423.92	245.08	0.00	63.37%	36.63%	0.00%
DP 22	24.64	19.36	0.00	56.00%	44.00%	0.00%
DP 23	163.63	147.37	0.00	52.62%	47.38%	0.00%
DP 24	43.12	33.88	0.00	56.00%	44.00%	0.00%
DP 25 AB	70.30	39.70	0.00	63.91%	36.09%	0.00%
DP 26	187.90	181.10	0.00	50.92%	49.08%	0.00%
DP 27	179.52	144.48	0.00	55.41%	44.59%	0.00%
DP 28	200.25	111.75	0.00	64.18%	35.82%	0.00%
DP 29	81.30	62.70	0.00	56.46%	43.54%	0.00%
DP 30	193.88	141.12	0.00	57.88%	42.12%	0.00%
DP 31	190.18	143.82	0.00	56.94%	43.06%	0.00%
DP 32	94.01	65.99	0.00	58.75%	41.25%	0.00%
DP 33	242.18	209.82	0.00	53.58%	46.42%	0.00%
DP 34	289.35	202.66	0.00	58.81%	41.19%	0.00%
DP 35	157.36	123.64	0.00	56.00%	44.00%	0.00%
DP 36	127.66	131.34	0.00	49.29%	50.71%	0.00%
DP 37	62.72	49.28	0.00	56.00%	44.00%	0.00%
DP 38	405.14	294.86	0.00	57.88%	42.12%	0.00%
DP 39	148.40	116.60	0.00	56.00%	44.00%	0.00%
DP 40	73.36	57.64	0.00	56.00%	44.00%	0.00%
DP 41	183.57	233.43	0.00	44.02%	55.98%	0.00%
DP 42	40.92	63.08	0.00	39.35%	60.65%	0.00%
DP 43	103.63	118.37	0.00	46.68%	53.32%	0.00%
DP 44	73.25	106.75	0.00	35.39%	51.57%	0.00%

BASIN	ACRES IMPERV.	ACRES GRASS	ACRES FOREST	PERCENT IMPERV.	PERCENT GRASS	PERCENT FOREST
DP 45	44.71	50.29	0.00	47.06%	52.94%	0.00%
DP 46	127.38	90.62	0.00	58.43%	41.57%	0.00%
DP 47	17.42	18.58	0.00	48.39%	51.61%	0.00%
DP 48	33.53	8.47	0.00	79.84%	20.16%	0.00%
DP 49	228.06	160.94	0.00	58.63%	41.37%	0.00%
DP 50	76.38	95.62	0.00	44.40%	55.60%	0.00%
DP 51	127.63	89.37	0.00	58.81%	41.19%	0.00%
DP 52	406.90	344.10	0.00	54.18%	45.82%	0.00%
DP 53	84.00	66.00	0.00	56.00%	44.00%	0.00%
DP 54	85.68	67.32	0.00	56.00%	44.00%	0.00%
DP 55	259.42	182.58	0.00	58.69%	41.31%	0.00%
DP 56	84.79	66.21	0.00	56.15%	43.85%	0.00%
DP 62	25.43	25.57	0.00	49.86%	50.14%	0.00%
DP 63	206.93	266.07	0.00	43.75%	56.25%	0.00%
DP 64	30.53	19.47	0.00	61.06%	38.94%	0.00%
DP 65	120.20	131.80	0.00	47.70%	52.30%	0.00%
DP 66	19.90	17.10	0.00	53.78%	46.22%	0.00%
M 1	1708.59	1210.41	0.00	58.53%	41.47%	0.00%
M 2	1780.31	1002.69	0.00	63.97%	36.03%	0.00%
M 3	707.82	380.18	0.00	65.06%	34.94%	0.00%
M 4	2429.24	1963.76	0.00	55.30%	44.70%	0.00%
M 5	1387.04	796.96	0.00	63.51%	36.49%	0.00%
M 6 B	1991.78	1362.22	0.00	59.39%	40.61%	0.00%
M 7	459.23	542.77	0.00	45.83%	54.17%	0.00%
M 8	574.15	470.85	0.00	54.94%	45.06%	0.00%
M 9	2974.33	2387.67	0.00	55.47%	44.53%	0.00%
M 10 A	1823.78	1285.22	0.00	58.66%	41.34%	0.00%
M 10 B	850.97	614.03	0.00	58.09%	41.91%	0.00%
M 11	684.29	379.71	0.00	64.31%	35.69%	0.00%
M 12	135.69	83.31	0.00	61.96%	38.04%	0.00%
M 13	486.86	233.14	0.00	67.62%	32.38%	0.00%
M 14	427.26	263.74	0.00	61.83%	38.17%	0.00%
M 15	911.53	453.47	0.00	66.78%	33.22%	0.00%
M 16	3227.45	2188.55	0.00	59.59%	40.41%	0.00%
M 17	403.23	222.77	0.00	64.41%	35.59%	0.00%
M 18	1286.35	820.65	0.00	61.05%	38.95%	0.00%
M 19	508.01	413.99	0.00	55.10%	44.90%	0.00%

BASIN	ACRES IMPERV.	ACRES GRASS	ACRES FOREST	PERCENT IMPERV.	PERCENT GRASS	PERCENT FOREST
M 20	927.48	644.52	0.00	59.00%	41.00%	0.00%
M 21	814.38	295.62	0.00	73.37%	26.63%	0.00%
M 22	87.23	38.77	0.00	69.23%	30.77%	0.00%
M 23	937.53	808.47	0.00	53.70%	46.30%	0.00%
M 24	80.43	28.57	0.00	73.79%	26.21%	0.00%
M 25	236.50	1198.50	0.00	16.48%	83.52%	0.00%
M 27	454.79	322.21	0.00	58.53%	41.47%	0.00%
M 28	271.51	90.49	0.00	75.00%	25.00%	0.00%
M 29	578.20	267.80	0.00	68.35%	31.65%	0.00%
M 30	483.30	327.70	0.00	59.59%	40.41%	0.00%
M 31	293.98	44.02	0.00	86.97%	13.03%	0.00%
M 32	778.58	243.42	0.00	76.18%	23.82%	0.00%
M 33	304.92	87.08	0.00	77.79%	22.21%	0.00%
M 34	2218.85	1000.15	0.00	68.93%	31.07%	0.00%
M 35	741.75	270.25	0.00	73.30%	26.70%	0.00%
M 36	1561.61	833.39	0.00	65.20%	34.80%	0.00%
M 37	777.71	417.29	0.00	65.08%	34.92%	0.00%
M 38	192.20	75.80	0.00	71.72%	28.28%	0.00%
M 39	369.74	213.26	0.00	63.42%	36.58%	0.00%
M 40	8524.61	5727.39	0.00	59.81%	40.19%	0.00%
M 41	3233.89	1855.11	0.00	63.55%	36.45%	0.00%
M 42	817.02	546.98	0.00	59.90%	40.10%	0.00%
M 43	960.14	600.86	0.00	61.51%	38.49%	0.00%
M 44	193.06	144.94	0.00	57.12%	42.88%	0.00%
M 45	629.52	347.48	0.00	64.43%	35.57%	0.00%
M 46	1670.32	963.68	0.00	63.41%	36.59%	0.00%
M 47	2077.43	1189.57	0.00	63.59%	36.41%	0.00%
M 48 DP	699.84	333.16	0.00	67.75%	32.25%	0.00%
M 48 LM	5683.92	4057.08	0.00	65.27%	46.59%	0.00%
M 49 A	926.85	476.15	0.00	66.06%	33.94%	0.00%
M 49 BDP	859.46	558.54	0.00	60.61%	39.39%	0.00%
M 49 BLM	1210.75	785.25	0.00	209.47%	135.86%	0.00%
M 50	3957.06	2520.94	0.00	61.08%	38.92%	0.00%
M 51	6684.81	4615.19	0.00	59.16%	40.84%	0.00%
M 52	2884.96	1565.04	0.00	64.83%	35.17%	0.00%
M 53	1379.06	1233.94	0.00	52.78%	47.22%	0.00%
M 55	652.26	335.74	0.00	66.02%	33.98%	0.00%

BASIN	ACRES IMPERV.	ACRES GRASS	ACRES FOREST	PERCENT IMPERV.	PERCENT GRASS	PERCENT FOREST
M 55 A	1484.30	586.70	0.00	71.67%	28.33%	0.00%
MN 1 A	169.12	132.88	0.00	56.00%	44.00%	0.00%
MN 1 B	669.37	746.63	0.00	47.27%	52.73%	0.00%
MN 1 C	1031.89	736.11	0.00	58.36%	41.64%	0.00%
MN 1 D	312.63	231.37	0.00	57.47%	42.53%	0.00%
MN 1 E	375.88	264.12	0.00	58.73%	41.27%	0.00%
MN 2 A	106.00	159.00	0.00	40.00%	60.00%	0.00%
MN 2 B	346.92	322.08	0.00	51.86%	48.14%	0.00%
MN 2 C	199.02	264.98	0.00	42.89%	57.11%	0.00%
MN 3	796.28	519.72	0.00	60.51%	39.49%	0.00%
MN 4	729.76	653.24	0.00	52.77%	47.23%	0.00%
MN 5	573.67	374.33	0.00	60.51%	39.49%	0.00%

APPENDIX E UNGAGED AREAS

BASIN	ACRES IMPERV.	ACRES GRASS	ACRES FOREST	PERCENT IMPERV.	PERCENT GRASS	PERCENT FOREST
CAL 12	909.75	691.25	0.00	56.82%	43.18%	0.00%
CAL 16	506.38	1367.37	39.25	26.47%	71.48%	2.05%
CAL 17	6669.43	7906.04	1294.53	42.03%	49.82%	8.16%
CAL 18	404.37	798.63	0.00	33.61%	66.39%	0.00%
CAL 20	2107.01	3243.68	4.31	39.35%	60.57%	0.08%
CAL 21	6215.71	9948.85	1610.44	34.97%	55.97%	9.06%
CAL 22	4092.69	4037.31	0.00	50.34%	49.66%	0.00%
CAL 24	766.43	1252.57	0.00	37.96%	62.04%	0.00%
LDP 9	6.48	2.52	0.00	72.00%	28.00%	0.00%
LDP 11	3017.93	3040.85	2394.22	35.70%	35.97%	28.32%
LDP 12	3866.40	2689.60	0.00	58.98%	41.02%	0.00%
LDP 15	237.90	635.10	0.00	27.25%	72.75%	0.00%
LDP 16	3545.22	5872.14	8590.64	19.69%	32.61%	47.70%
LDP 17	1411.74	1135.26	0.00	55.43%	44.57%	0.00%
LDP 20	271.55	335.74	11.71	43.87%	54.24%	1.89%

APPENDIX F

LAND COVER IN ACRES
FOR EACH GAGE ASSIGNMENT PARTITION

BASIN ID #	TOTAL AREA	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS
CA 2	718.00	12	474.91	66.1%	273.19	201.72	17	161.73	22.5%	93.03	68.70	18	81.36	11.3%	46.80	34.56					
CA 5	201.00	18	201.00	100.0%	112.73	88.27															
CA 6	681.00	18	380.45	55.9%	201.01	179.44	21	128.81	18.9%	68.06	60.75	22	171.74	25.2%	90.74	81.00					
CA 7	741.00	18	741.00	100.0%	424.63	316.37															
CA 7 M	659.00	19	659.00	100.0%	408.41	250.59															
CA 7 Q	4063.00	13	907.53	22.3%	556.22	351.31	14	1954.30	48.1%	1197.78	756.52	18	173.16	4.3%	106.13	67.03	19	1028.01	25.30%	630.06	397.95
CA 7 V	847.00	19	847.00	100.0%	543.21	303.79															
CA 7 W	2487.00	13	248.24	9.9%	124.77	123.47	14	27.23	1.1%	13.69	13.54	18	1459.25	58.4%	733.42	725.83	19	762.28	30.53%	383.12	379.16
CA 8	747.00	18	747.00	100.0%	382.67	354.33															
CA 9	203.00	18	203.00	100.0%	120.93	82.07															
CA 10	5439.00	13	998.98	18.4%	568.08	430.90	18	4440.02	81.6%	2524.84	1915.18										
CA 11 A	567.00	18	567.00	100.0%	276.53	290.47															
CA 11 B	844.00	18	844.00	100.0%	465.90	378.10															
CA 12	2622.00	18	2622.00	100.0%	1508.08	1113.92															
CA 13	3726.00	13	1737.48	46.6%	1012.54	724.94	18	1988.52	53.4%	1158.83	829.69										
CA 14	187.00	18	187.00	100.0%	132.77	54.23															
CA 15 A	960.00	18	960.00	100.0%	438.17	521.83															
CA 15 B	79.00	18	69.34	87.8%	40.93	28.41	22	9.66	12.2%	5.70	3.96										
CA 16	227.00	18	227.00	100.0%	140.17	86.83															
CA 17	527.00	18	310.59	58.9%	194.39	116.20	22	216.41	41.1%	135.44	80.97										
CA 18	1062.00	18	214.18	20.2%	133.38	80.80	19	583.30	53.0%	350.78	212.52	22	164.12	15.5%	102.20	61.92	23	120.40	11.34%	74.98	45.42
CA 18 E-A	3908.00	12	178.97	4.6%	78.63	100.34	13	270.45	6.9%	118.81	151.64	17	2105.60	53.9%	925.03	1180.57	18	1392.98	35.64%	611.97	781.01
CA 18 E-B	786.00	17	786.00	100.0%	551.87	234.13															
CA 19	1267.00	19	243.54	19.2%	130.93	112.61	23	1023.46	80.8%	550.21	473.25										
CA 20	249.00	19	249.00	100.0%	166.35	82.65															
CA 21	636.00	19	243.54	38.3%	94.35	149.19	23	392.46	61.7%	152.05	240.41										
CA 22	671.00	19	671.00	100.0%	247.85	423.15															
CA 23	603.00	19	533.41	88.5%	157.43	375.98	23	69.59	11.5%	20.54	49.05										
CA 24	1453.00	19	20.37	1.4%	9.01	11.36	23	1432.63	98.6%	633.45	799.18										
CA 25	312.00	18	236.14	76.3%	119.07	119.07	19	73.86	23.7%	36.93	36.93										
CA 26	586.00	19	586.00	100.0%	282.98	303.02															
CA 27	390.00	19	390.00	100.0%	155.54	234.46															
CA 28	1329.00	19	1329.00	100.0%	343.00	986.00															
CA 29	802.00	19	802.00	100.0%	458.92	343.08															
CA 30	766.00	19	766.00	100.0%	431.68	334.32															
CA 31	947.00	19	947.00	100.0%	522.63	424.37															
CA 32	860.00	14	116.38	13.5%	55.76	60.62	19	743.62	86.5%	356.25	387.37										
CA 33	112.00	14	112.00	100.0%	74.97	37.03															
CA 34 A	1590.00	14	1281.49	80.6%	784.71	496.78	19	308.51	19.4%	188.91	119.60										
CA 34 B	100.00	14	100.00	100.0%	60.09	39.91															
CA 36	141.00	14	141.00	100.0%	83.10	57.90															
CA 38	950.00	19	950.00	100.0%	391.61	558.39															
CA 39	898.00	18	522.65	58.3%	274.65	248.00	22	373.35	41.7%	196.20	177.15										
CA 40	1207.00	22	1207.00	100.0%	672.65	534.35															
CA 41	465.00	22	465.00	100.0%	290.86	174.14															
CA 42 A	680.00	22	680.00	100.0%	446.73	233.27															
CA 42 B	576.00	18	307.33	53.4%	170.15	137.18	22	268.67	46.6%	148.75	119.92										
CA 43 A	26.00	22	26.00	100.0%	14.56	11.44															
CA 43 B	44.00	22	44.00	100.0%	29.32	14.68															
CA 44	70.00	22	70.00	100.0%	49.81	20.19															

BASIN ID #	TOTAL AREA	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS
CA 45	157.00	22	157.00	100.0%	99.72	57.28															
CA 46	343.00	22	343.00	100.0%	204.20	138.80															
CA 47	54.00	22	54.00	100.0%	35.47	18.53															
CA 48	349.00	22	349.00	100.0%	244.28	104.72															
CA 49	267.00	22	267.00	100.0%	184.60	82.40															
CA 50	131.00	22	131.00	100.0%	86.77	44.23															
CA 51	1008.00	22	767.42	76.1%	446.51	320.91	23	240.58	23.9%	139.98	100.60										
CA 53	73.00	23	73.00	100.0%	42.08	30.92															
CA 54	105.00	23	105.00	100.0%	68.74	36.26															
CA 55	182.00	23	182.00	100.0%	94.57	87.43															
CA 56	2094.00	23	2094.00	100.0%	1182.24	911.76															
CA 57	324.00	22	324.00	100.0%	184.27	139.73															
CA 58	997.00	18	923.76	92.7%	487.57	436.19	22	73.24	7.3%	38.66	34.58										
CA 61	9.00	22	9.00	100.0%	5.04	3.96															
CA 62	235.00	22	235.00	100.0%	135.05	99.95															
DP 1	281.00	3	281.00	100.0%	174.31	106.69															
DP 2 A	72.00	3	72.00	100.0%	40.32	31.68															
DP 2 B	397.00	3	397.00	100.0%	223.38	173.62															
DP 3	196.00	3	196.00	100.0%	117.59	78.41															
DP 4	365.00	3	365.00	100.0%	221.31	143.69															
DP 5	1216.00	3	1212.19	99.7%	552.41	659.78	4	3.71	0.3%	1.69	2.02										
DP 6	705.00	3	705.00	100.0%	405.24	299.76															
DP 7	955.00	3	955.00	100.0%	498.08	456.92															
DP 8	422.00	3	422.00	100.0%	243.39	178.61															
DP 9	750.00	3	317.44	42.3%	181.20	136.24	5	144.97	19.3%	82.75	62.22	6	287.59	38.3%	164.16	123.43					
DP 10	154.00	5	154.00	100.0%	86.24	67.76															
DP 11	950.00	5	549.46	57.8%	314.42	235.04	6	400.54	42.2%	229.20	171.34										
DP 12	210.00	5	210.00	100.0%	143.49	66.51															
DP 13	155.00	5	155.00	100.0%	97.54	57.46															
DP 14	504.00	5	504.00	100.0%	313.70	190.30															
DP 15	387.00	5	387.00	100.0%	226.78	160.22															
DP 16	145.00	5	145.00	100.0%	80.66	64.34															
DP 17 A	175.00	5	175.00	100.0%	80.45	94.55															
DP 17 B	441.00	5	441.00	100.0%	251.26	189.74															
DP 18	253.00	5	253.00	100.0%	149.07	103.93															
DP 19	1279.00	5	415.14	32.5%	242.68	172.46	6	863.86	67.5%	504.99	358.87										
DP 20	165.00	5	165.00	100.0%	128.99	36.01															
DP 21	669.00	5	656.66	98.2%	416.10	240.56	8	12.34	1.8%	7.82	4.52										
DP 22	44.00	5	44.00	100.0%	24.64	19.36															
DP 23	311.00	5	136.46	43.9%	71.80	64.66	6	174.54	56.1%	91.84	82.70										
DP 24	77.00	5	77.00	100.0%	43.12	33.88															
DP 25 AB	110.00	5	74.88	68.1%	47.86	27.02	8	35.12	31.9%	22.44	12.68										
DP 26	369.00	5	89.00	24.1%	45.32	43.68	6	15.44	4.2%	7.86	7.58	8	67.90	18.4%	34.57	33.33	9	196.66	53.30%	100.14	96.52
DP 27	324.00	5	1.49	0.5%	0.83	0.66	6	322.51	99.5%	178.70	143.81										
DP 28	312.00	9	312.00	100.0%	200.25	111.75															
DP 29	144.00	8	75.90	52.7%	42.85	33.05	9	68.10	47.3%	38.45	29.65										
DP 30	335.00	9	335.00	100.0%	193.88	141.12															
DP 31	334.00	8	334.00	100.0%	190.18	143.82															
DP 32	160.00	8	160.00	100.0%	94.01	65.99															
DP 33	452.00	8	452.00	100.0%	242.18	209.82															

BASIN ID #	TOTAL AREA	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS
DP 34	492.00	8	492.00	100.0%	289.35	202.66															
DP 35	281.00	8	281.00	100.0%	157.36	123.64															
DP 36	259.00	8	118.78	45.9%	58.54	60.24	9	140.22	54.1%	69.11	71.11										
DP 37	112.00	8	112.00	100.0%	62.72	49.28															
DP 38	700.00	8	700.00	100.0%	405.14	294.86															
DP 39	265.00	8	265.00	100.0%	148.40	116.60															
DP 40	131.00	8	131.00	100.0%	73.36	57.64															
DP 41	417.00	8	1.01	0.2%	0.44	0.57	9	415.99	99.8%	183.12	232.87										
DP 42	104.00	8	104.00	100.0%	40.92	63.08															
DP 43	222.00	8	183.06	82.5%	85.45	97.61	9	38.94	17.5%	18.18	20.76										
DP 44	207.00	8	122.08	59.0%	49.57	72.51	9	84.92	41.0%	34.48	50.44										
DP 45	95.00	9	95.00	100.0%	44.71	50.29															
DP 46	218.00	8	218.00	100.0%	127.38	90.62															
DP 47	36.00	8	26.00	72.2%	12.58	13.42															
DP 48	42.00	8	42.00	100.0%	33.53	8.47															
DP 49	389.00	8	146.53	37.7%	85.91	60.62	9	242.47	62.3%	142.15	100.32										
DP 50	172.00	8	172.00	100.0%	76.38	95.62															
DP 51	217.00	8	217.00	100.0%	127.63	89.37															
DP 52	751.00	5	751.00	100.0%	406.90	344.10															
DP 53	150.00	8	150.00	100.0%	84.00	66.00															
DP 54	153.00	8	153.00	100.0%	85.68	67.32															
DP 55	442.00	8	424.12	96.0%	248.92	175.20	11	17.88	4.0%	10.49	7.39										
DP 56	151.00	8	151.00	100.0%	84.79	66.21															
DP 62	51.00	8	51.00	100.0%	25.43	25.57															
DP 63	473.00	5	173.37	36.7%	75.85	97.52	6	260.99	55.2%	114.18	146.81	9	38.64	8.2%	16.90	21.74					
DP 64	50.00	8	26.37	52.7%	16.10	10.27	9	23.63	47.3%	14.43	9.20										
DP 65	252.00	8	252.00	100.0%	120.20	131.80															
DP 66	37.00	8	37.00	100.0%	19.90	17.10															
M 1	2919.00	2	2919.00	100.0%	1708.59	1210.41															
M 2	2783.00	2	78.08	2.8%	49.95	28.13	4	2704.92	97.2%	1730.36	974.56										
M 3	1088.00	4	1088.00	100.0%	707.82	380.18															
M 4	4393.00	4	2140.30	48.7%	1183.54	956.76	7	2252.70	51.3%	1245.70	1007.00										
M 5	2184.00	4	2184.00	100.0%	1387.04	796.96															
M 6	3354.00	4	3354.00	100.0%	1991.78	1362.22															
M 7	1002.00	4	1002.00	100.0%	459.23	542.77															
M 8	1045.00	4	511.69	49.0%	281.13	230.56	6	162.62	15.6%	89.46	73.36	7	370.49	35.5%	203.56	166.93					
M 9	5362.00	4	677.75	12.6%	375.95	301.80	6	4684.25	87.4%	2598.38	2085.87										
M 10 A	3109.00	6	3109.00	100.0%	1823.78	1285.22															
M 10 B	1465.00	6	1460.48	99.7%	848.35	612.13	7	4.52	0.3%	2.63	1.89										
M 11	1064.00	6	40.45	3.8%	26.01	14.44	7	1023.55	96.2%	658.27	365.28										
M 12	219.00	6	40.65	18.6%	25.19	15.46	7	178.35	81.4%	110.50	67.85										
M 13	720.00	6	720.00	100.0%	486.86	233.14															
M 14	691.00	6	671.43	97.2%	415.16	256.27	7	19.57	2.8%	12.10	7.47										
M 15	1365.00	6	58.30	4.3%	38.93	19.37	7	1306.70	95.7%	872.60	434.10										
M 16	5416.00	6	5416.00	100.0%	3227.45	2188.55															
M 17	626.00	6	357.50	57.1%	230.28	127.22	7	268.50	42.9%	172.95	95.55										
M 18	2107.00	6	1766.24	83.8%	1078.31	687.93	7	340.76	16.2%	208.04	132.72										
M 19	922.00	7	922.00	100.0%	508.01	413.99															
M 20	1572.00	6	688.86	43.8%	406.43	282.43	7	883.14	56.2%	521.05	362.09										
M 21	1110.00	7	1110.00	100.0%	814.38	295.62															

BASIN ID #	TOTAL AREA	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS	GAGE NUMBER	AREA ACRES	% OF TOTAL	ACRES IMPERV.	ACRES GRASS
M 22	126.00	7	126.00	100.0%	87.23	38.77															
M 23	1746.00	6	610.44	35.0%	327.78	282.66	7	773.56	44.3%	415.37	358.19	9	353.20	20.2%	189.65	163.55	10	8.80	0.50%	4.73	4.07
M 24	109.00	7	109.00	100.0%	80.43	28.57															
M 25	1435.00	4	684.52	47.7%	112.81	571.71	6	750.48	52.3%	123.68	626.80										
M 27	777.00	6	3.13	0.4%	1.83	1.30	7	643.76	82.9%	376.80	266.96	10	130.11	16.7%	76.18	53.95					
M 28	362.00	7	313.62	86.6%	235.22	78.40	10	48.38	13.4%	36.29	12.09										
M 29	846.00	7	225.50	26.7%	154.12	71.38	10	620.50	73.3%	424.08	196.42										
M 30	811.00	7	657.04	81.0%	391.55	265.49	10	153.96	19.0%	91.75	62.21										
M 31	338.00	10	338.00	100.0%	293.98	44.02															
M 32	1022.00	10	1022.00	100.0%	778.58	243.42															
M 33	392.00	10	392.00	100.0%	304.92	87.08															
M 34	3219.00	10	3283.00	101.4%	2249.17	1013.83															
M 35	1012.00	10	1012.00	100.0%	741.75	270.25															
M 36	2395.00	6	1.38	0.1%	0.90	0.48	7	4.22	0.2%	2.75	1.47	9	825.42	34.5%	538.20	287.22	10	1563.98	65.30%	1019.76	544.22
M 37	1195.00	10	1195.00	100.0%	777.71	417.29															
M 38	268.00	10	268.00	100.0%	192.20	75.80															
M 39	583.00	10	583.00	100.0%	369.74	213.26															
M 40	14252.00	10	894.92	6.3%	535.28	359.64	13	11501.39	80.7%	6879.37	4622.02	14	1855.69	13.0%	1109.95	745.74					
M 41	5089.00	9	806.72	15.9%	512.64	294.08	10	1925.20	37.8%	1223.40	701.80	12	699.69	13.7%	444.63	255.06	13	1657.39	32.57%	1053.22	604.17
M 42	1364.00	9	474.48	34.8%	284.21	190.27	10	889.52	65.2%	532.81	356.71										
M 43	1561.00	9	1458.90	93.5%	897.34	561.56	10	102.10	6.5%	62.80	39.30										
M 44	338.00	10	338.00	100.0%	193.06	144.94															
M 45	977.00	9	977.00	100.0%	629.53	347.47															
M 46	1657.00	9	928.80	56.1%	587.41	341.39	12	728.20	43.9%	460.54	267.66										
M 47	3267.00	6	900.81	27.6%	572.81	328.00	9	2366.19	72.4%	1504.62	861.57										
M 48 DP	1033.00	12	1033.00	100.0%	699.84	333.16															
M 48 LM	8708.00	9	631.54	7.3%	361.47	270.07	12	6719.04	77.2%	3845.68	2873.36	13	1357.42	15.6%	776.93	580.49					
M 49 A	1403.00	9	621.07	44.3%	410.29	210.78	12	781.93	55.7%	516.56	265.37										
M 49 BDP	1418.00	12	1418.00	100.0%	859.46	558.54															
M 49 BLM	578.00	12	578.00	100.0%	351.28	226.72															
M 50	6478.00	10	4026.29	62.2%	2459.44	1566.85	13	1117.35	17.2%	682.53	434.82	14	1334.36	20.6%	815.09	519.27					
M 51	11300.00	6	3735.00	33.1%	2209.54	1525.46	9	7544.72	66.8%	4463.28	3081.44	12	20.28	0.2%	12.00	8.28					
M 52	4450.00	9	4450.00	100.0%	2884.96	1565.04															
M 53	2613.00	8	1695.40	64.9%	894.78	800.62	9	29.03	1.1%	15.32	13.71	11	888.57	34.0%	468.98	419.61					
M 55 A	988.00	11	390.08	39.5%	257.53	132.55	12	597.92	60.5%	394.74	203.18										
M 55 B	2071.00	11	826.52	39.9%	592.37	234.15	12	1244.48	60.1%	891.93	352.55										
MN 1 A	302.00	3	109.89	36.4%	61.54	48.35	4	192.11	63.6%	107.58	84.53										
MN 1 B	1416.00	3	199.09	14.1%	94.11	104.98	4	1177.98	83.2%	556.85	621.13	6	38.95	2.8%	18.41	20.54					
MN 1 C	1768.00	3	213.11	12.1%	124.38	88.73	4	745.07	42.1%	434.86	310.21	6	809.82	45.8%	472.65	337.17					
MN 1 D	544.00	4	213.90	39.3%	122.92	90.98	6	330.10	60.7%	189.70	140.40										
MN 1 E	640.00	6	640.00	100.0%	375.88	264.12															
MN 2 A	265.00	4	265.00	100.0%	106.00	159.00															
MN 2 B	669.00	4	669.00	100.0%	346.92	322.08															
MN 2 C	464.00	4	444.35	95.8%	190.59	253.76	6	19.65	4.2%	8.43	11.22										
MN 3	1316.00	4	1316.00	100.0%	796.28	519.72															
MN 4	1383.00	3	440.32	31.8%	232.34	207.98	4	942.68	68.2%	497.42	445.26										
MN 5	948.00	4	948.00	100.0%	573.67	374.33															

APPENDIX G

LAND COVER IN SQUARE MILES FOR EACH GAGE ASSIGNMENT PARTITION

BASIN ID #	TOTAL AREA	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS
CA 2	1.122	12	0.742	66.1%	0.427	0.315	17	0.253	22.5%	0.145	0.107	18	0.127	11.3%	0.073	0.054					
CA 5	0.314	18	0.314	100.0%	0.176	0.138															
CA 6	1.064	18	0.594	55.8%	0.314	0.280	21	0.201	18.9%	0.106	0.095	22	0.268	25.2%	0.142	0.127					
CA 7	1.158	18	1.158	100.0%	0.663	0.494															
CA 7 M	1.030	19	1.030	100.0%	0.638	0.392															
CA 7 Q	6.348	13	1.418	22.3%	0.869	0.549	14	3.054	48.1%	1.872	1.182	18	0.271	4.3%	0.166	0.105	19	1.606	25.30%	0.984	0.622
CA 7 V	1.323	19	1.323	100.0%	0.849	0.475															
CA 7 W	3.902	13	0.388	9.9%	0.185	0.193	14	0.043	1.1%	0.021	0.021	18	2.280	58.4%	1.146	1.134	19	1.191	30.53%	0.599	0.592
CA 8	1.167	18	1.167	100.0%	0.614	0.554															
CA 9	0.317	18	0.317	100.0%	0.189	0.128															
CA 10	8.498	13	1.561	18.4%	0.888	0.673	18	6.938	81.6%	3.945	2.992										
CA 11 A	0.886	18	0.886	100.0%	0.432	0.454															
CA 11 B	1.319	18	1.319	100.0%	0.728	0.591															
CA 12	4.097	18	4.097	100.0%	2.356	1.740															
CA 13	5.822	13	2.715	46.6%	1.582	1.133	18	3.107	53.4%	1.811	1.296										
CA 14	0.292	18	0.292	100.0%	0.207	0.085															
CA 15 A	1.500	18	1.500	100.0%	0.685	0.815															
CA 15 B	0.123	18	0.108	87.8%	0.064	0.044	22	0.015	12.2%	0.009	0.006										
CA 16	0.355	18	0.355	100.0%	0.219	0.136															
CA 17	0.823	18	0.485	58.9%	0.304	0.182	22	0.338	41.1%	0.212	0.127										
CA 18	1.659	18	0.335	20.2%	0.208	0.126	19	0.880	53.0%	0.548	0.332	22	0.256	15.5%	0.160	0.097	23	0.188	11.34%	0.117	0.071
CA 18 E-A	6.106	12	0.280	4.6%	0.123	0.157	13	0.423	6.9%	0.186	0.237	17	3.290	53.9%	1.445	1.845	18	2.177	35.64%	0.958	1.220
CA 18 E-B	1.228	17	1.228	100.0%	0.862	0.366															
CA 19	1.960	19	0.381	19.2%	0.205	0.176	23	1.599	80.8%	0.860	0.739										
CA 20	0.389	19	0.389	100.0%	0.260	0.129															
CA 21	0.994	19	0.381	38.3%	0.147	0.233	23	0.613	61.7%	0.238	0.376										
CA 22	1.048	19	1.048	100.0%	0.387	0.661															
CA 23	0.942	19	0.833	88.5%	0.246	0.587	23	0.109	11.5%	0.032	0.077										
CA 24	2.270	19	0.032	1.4%	0.014	0.018	23	2.238	98.6%	0.990	1.249										
CA 25	0.488	18	0.372	76.3%	0.186	0.186	19	0.115	23.7%	0.058	0.058										
CA 26	0.916	19	0.916	100.0%	0.442	0.473															
CA 27	0.609	19	0.609	100.0%	0.243	0.366															
CA 28	2.077	19	2.077	100.0%	0.536	1.541															
CA 29	1.253	19	1.253	100.0%	0.717	0.536															
CA 30	1.197	19	1.197	100.0%	0.674	0.522															
CA 31	1.480	19	1.480	100.0%	0.817	0.663															
CA 32	1.344	14	0.182	13.5%	0.087	0.095	19	1.162	86.5%	0.557	0.605										
CA 33	0.175	14	0.175	100.0%	0.117	0.058															
CA 34 A	2.484	14	2.002	80.6%	1.226	0.778	19	0.482	19.4%	0.295	0.187										
CA 34 B	0.156	14	0.156	100.0%	0.094	0.062															
CA 36	0.220	14	0.220	100.0%	0.130	0.090															
CA 38	1.484	19	1.484	100.0%	0.612	0.872															
CA 39	1.400	18	0.817	58.3%	0.429	0.387	22	0.583	41.7%	0.307	0.277										
CA 40	1.886	22	1.886	100.0%	1.051	0.835															
CA 41	0.727	22	0.727	100.0%	0.454	0.272															
CA 42 A	1.063	22	1.063	100.0%	0.698	0.364															
CA 42 B	0.900	18	0.480	53.4%	0.268	0.214	22	0.420	46.6%	0.232	0.187										
CA 43 A	0.041	22	0.041	100.0%	0.023	0.018															
CA 43 B	0.069	22	0.069	100.0%	0.046	0.023															
CA 44	0.109	22	0.109	100.0%	0.078	0.032															

BASIN ID #	TOTAL AREA	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS
CA 45	0.245	22	0.245	100.0%	0.156	0.090															
CA 46	0.536	22	0.536	100.0%	0.319	0.217															
CA 47	0.084	22	0.084	100.0%	0.055	0.029															
CA 48	0.545	22	0.545	100.0%	0.382	0.164															
CA 49	0.417	22	0.417	100.0%	0.288	0.129															
CA 50	0.205	22	0.205	100.0%	0.136	0.069															
CA 51	1.575	22	1.199	76.1%	0.698	0.501	23	0.376	23.9%	0.219	0.157										
CA 53	0.114	23	0.114	100.0%	0.066	0.048															
CA 54	0.164	23	0.164	100.0%	0.107	0.057															
CA 55	0.284	23	0.284	100.0%	0.148	0.137															
CA 56	3.272	23	3.272	100.0%	1.847	1.425															
CA 57	0.506	22	0.506	100.0%	0.288	0.218															
CA 58	1.558	18	1.443	92.7%	0.762	0.682	22	0.114	7.3%	0.060	0.054										
CA 61	0.014	22	0.014	100.0%	0.008	0.006															
CA 62	0.367	22	0.367	100.0%	0.211	0.156															
DP 1	0.439	3	0.439	100.0%	0.272	0.167															
DP 2 A	0.113	3	0.113	100.0%	0.063	0.050															
DP 2 B	0.620	3	0.620	100.0%	0.349	0.271															
DP 3	0.306	3	0.306	100.0%	0.184	0.123															
DP 4	0.570	3	0.570	100.0%	0.346	0.225															
DP 5	1.900	3	1.894	99.7%	0.863	1.031	4	0.006	0.3%	0.003	0.003										
DP 6	1.102	3	1.102	100.0%	0.633	0.468															
DP 7	1.492	3	1.492	100.0%	0.778	0.714															
DP 8	0.659	3	0.659	100.0%	0.380	0.279															
DP 9	1.172	3	0.496	42.3%	0.283	0.213	5	0.227	19.3%	0.129	0.097	6	0.449	38.3%	0.256	0.193					
DP 10	0.241	5	0.241	100.0%	0.135	0.106															
DP 11	1.484	5	0.859	57.8%	0.491	0.367	6	0.626	42.2%	0.358	0.268										
DP 12	0.328	5	0.328	100.0%	0.224	0.104															
DP 13	0.242	5	0.242	100.0%	0.152	0.090															
DP 14	0.788	5	0.788	100.0%	0.490	0.297															
DP 15	0.605	5	0.605	100.0%	0.354	0.250															
DP 16	0.227	5	0.227	100.0%	0.126	0.101															
DP 17 A	0.273	5	0.273	100.0%	0.126	0.148															
DP 17 B	0.689	5	0.689	100.0%	0.393	0.296															
DP 18	0.395	5	0.395	100.0%	0.233	0.162															
DP 19	1.998	5	0.649	32.5%	0.379	0.269	6	1.350	67.5%	0.789	0.561										
DP 20	0.258	5	0.258	100.0%	0.202	0.056															
DP 21	1.045	5	1.026	98.2%	0.650	0.376	8	0.019	1.8%	0.012	0.007										
DP 22	0.069	5	0.069	100.0%	0.039	0.030															
DP 23	0.486	5	0.213	43.9%	0.112	0.101	6	0.273	56.1%	0.143	0.129										
DP 24	0.120	5	0.120	100.0%	0.067	0.053															
DP 25 AB	0.172	5	0.117	68.1%	0.075	0.042	8	0.055	31.9%	0.035	0.020										
DP 26	0.577	5	0.139	24.1%	0.071	0.068	6	0.024	4.2%	0.012	0.012	8	0.106	18.4%	0.054	0.052	9	0.307	53.30%	0.156	0.151
DP 27	0.506	5	0.002	0.5%	0.001	0.001	6	0.504	99.5%	0.279	0.225										
DP 28	0.488	9	0.488	100.0%	0.313	0.175															
DP 29	0.225	8	0.119	52.7%	0.067	0.052	9	0.106	47.3%	0.060	0.046										
DP 30	0.523	9	0.523	100.0%	0.303	0.220															
DP 31	0.522	8	0.522	100.0%	0.297	0.225															
DP 32	0.250	8	0.250	100.0%	0.147	0.103															
DP 33	0.706	8	0.706	100.0%	0.378	0.328															

BASIN ID #	TOTAL AREA	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV	SQ. MI GRASS
DP 34	0.769	8	0.769	100.0%	0.452	0.317															
DP 35	0.439	8	0.439	100.0%	0.246	0.193															
DP 36	0.405	8	0.186	45.9%	0.091	0.094	9	0.219	54.1%	0.108	0.111										
DP 37	0.175	8	0.175	100.0%	0.098	0.077															
DP 38	1.094	8	1.094	100.0%	0.633	0.461															
DP 39	0.414	8	0.414	100.0%	0.232	0.182															
DP 40	0.205	8	0.205	100.0%	0.115	0.090															
DP 41	0.652	8	0.002	0.2%	0.001	0.001	9	0.650	99.8%	0.286	0.364										
DP 42	0.163	8	0.163	100.0%	0.064	0.099															
DP 43	0.347	8	0.286	82.5%	0.134	0.153	9	0.061	17.5%	0.028	0.032										
DP 44	0.323	8	0.191	59.0%	0.077	0.113	9	0.133	41.0%	0.054	0.079										
DP 45	0.148	9	0.148	100.0%	0.070	0.079															
DP 46	0.341	8	0.341	100.0%	0.199	0.142															
DP 47	0.056	8	0.041	72.2%	0.020	0.021															
DP 48	0.066	8	0.066	100.0%	0.052	0.013															
DP 49	0.608	8	0.229	37.7%	0.134	0.095	9	0.379	62.3%	0.222	0.157										
DP 50	0.269	8	0.269	100.0%	0.119	0.149															
DP 51	0.339	8	0.339	100.0%	0.199	0.140															
DP 52	1.173	5	1.173	100.0%	0.636	0.538															
DP 53	0.234	8	0.234	100.0%	0.131	0.103															
DP 54	0.239	8	0.239	100.0%	0.134	0.105															
DP 55	0.691	8	0.663	96.0%	0.389	0.274	11	0.028	4.0%	0.016	0.012										
DP 56	0.236	8	0.236	100.0%	0.132	0.103															
DP 62	0.080	8	0.080	100.0%	0.040	0.040															
DP 63	0.739	5	0.271	36.7%	0.119	0.152	6	0.408	55.2%	0.178	0.229	9	0.060	8.2%	0.026	0.034					
DP 64	0.078	8	0.041	52.7%	0.025	0.016	9	0.037	47.3%	0.023	0.014										
DP 65	0.394	8	0.394	100.0%	0.188	0.206															
DP 66	0.058	8	0.058	100.0%	0.031	0.027															
M 1	4.561	2	4.561	100.0%	2.670	1.891															
M 2	4.348	2	0.122	2.8%	0.078	0.044	4	4.226	97.2%	2.704	1.523										
M 3	1.700	4	1.700	100.0%	1.106	0.594															
M 4	8.864	4	3.344	48.7%	1.849	1.495	7	3.520	51.3%	1.946	1.573										
M 5	3.413	4	3.413	100.0%	2.167	1.245															
M 6	5.241	4	5.241	100.0%	3.112	2.128															
M 7	1.566	4	1.566	100.0%	0.718	0.848															
M 8	1.633	4	0.800	49.0%	0.439	0.360	6	0.254	15.6%	0.140	0.115	7	0.579	35.5%	0.318	0.261					
M 9	8.378	4	1.059	12.6%	0.587	0.472	6	7.319	87.4%	4.060	3.259										
M 10 A	4.858	6	4.858	100.0%	2.850	2.008															
M 10 B	2.289	6	2.282	99.7%	1.326	0.956	7	0.007	0.3%	0.004	0.003										
M 11	1.663	6	0.063	3.8%	0.041	0.023	7	1.599	96.2%	1.029	0.571										
M 12	0.342	6	0.064	18.6%	0.039	0.024	7	0.279	81.4%	0.173	0.106										
M 13	1.125	6	1.125	100.0%	0.761	0.364															
M 14	1.080	6	1.049	97.2%	0.649	0.400	7	0.031	2.8%	0.019	0.012										
M 15	2.133	6	0.091	4.3%	0.061	0.030	7	2.042	95.7%	1.363	0.678										
M 16	8.463	6	8.463	100.0%	5.043	3.420															
M 17	0.978	6	0.559	57.1%	0.360	0.199	7	0.420	42.9%	0.270	0.149										
M 18	3.292	6	2.760	83.8%	1.685	1.075	7	0.532	16.2%	0.325	0.207										
M 19	1.441	7	1.441	100.0%	0.794	0.647															
M 20	2.456	6	1.076	43.8%	0.635	0.441	7	1.380	56.2%	0.814	0.566										
M 21	1.734	7	1.734	100.0%	1.272	0.462															

BASIN ID #	TOTAL AREA	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS	GAGE NUMBER	AREA SQ. MILES	% OF TOTAL	SQ. MI IMPERV.	SQ. MI GRASS
M 22	0.197	7	0.197	100.0%	0.136	0.061															
M 23	2.728	6	0.954	35.0%	0.512	0.442	7	1.209	44.3%	0.649	0.560	9	0.552	20.2%	0.296	0.256	10	0.014	0.50%	0.007	0.006
M 24	0.170	7	0.170	100.0%	0.126	0.045															
M 25	2.242	4	1.070	47.7%	0.176	0.893	6	1.173	52.3%	0.193	0.979										
M 27	1.214	6	0.005	0.4%	0.003	0.002	7	1.006	82.9%	0.589	0.417	10	0.203	16.7%	0.119	0.084					
M 28	0.566	7	0.490	86.6%	0.368	0.122	10	0.076	13.4%	0.057	0.019										
M 29	1.322	7	0.352	26.7%	0.241	0.112	10	0.970	73.3%	0.663	0.307										
M 30	1.267	7	1.027	81.0%	0.612	0.415	10	0.241	19.0%	0.143	0.097										
M 31	0.528	10	0.528	100.0%	0.459	0.069															
M 32	1.597	10	1.597	100.0%	1.217	0.380															
M 33	0.613	10	0.613	100.0%	0.476	0.136															
M 34	5.030	10	5.098	101.4%	3.514	1.584															
M 35	1.581	10	1.581	100.0%	1.159	0.422															
M 36	3.742	6	0.002	0.1%	0.001	0.001	7	0.007	0.2%	0.004	0.002	9	1.290	34.5%	0.841	0.449	10	2.444	65.30%	1.593	0.850
M 37	1.867	10	1.867	100.0%	1.215	0.652															
M 38	0.419	10	0.419	100.0%	0.300	0.118															
M 39	0.911	10	0.911	100.0%	0.578	0.333															
M 40	22.269	10	1.398	6.3%	0.836	0.562	13	17.971	80.7%	10.749	7.222	14	2.900	13.0%	1.734	1.165					
M 41	7.952	9	1.261	15.9%	0.801	0.459	10	3.008	37.8%	1.912	1.097	12	1.093	13.7%	0.695	0.399	13	2.590	32.57%	1.646	0.944
M 42	2.131	9	0.741	34.8%	0.444	0.297	10	1.390	65.2%	0.833	0.557										
M 43	2.439	9	2.280	93.5%	1.402	0.877	10	0.160	6.5%	0.098	0.061										
M 44	0.528	10	0.528	100.0%	0.302	0.226															
M 45	1.527	9	1.527	100.0%	0.984	0.543															
M 46	2.589	9	1.451	56.1%	0.918	0.533	12	1.138	43.9%	0.720	0.418										
M 47	5.105	6	1.408	27.6%	0.895	0.513	9	3.697	72.4%	2.351	1.346										
M 48 DP	1.614	12	1.614	100.0%	1.094	0.521															
M 48 LM	13.606	9	0.987	7.3%	0.565	0.422	12	10.499	77.2%	6.009	4.490	13	2.121	15.6%	1.214	0.907					
M 49 A	2.192	9	0.970	44.3%	0.641	0.329	12	1.222	55.7%	0.807	0.415										
M 49 BDP	2.216	12	2.216	100.0%	1.343	0.873															
M 49 BLM	0.903	12	0.903	100.0%	0.549	0.354															
M 50	10.122	10	6.291	62.2%	3.843	2.448	13	1.746	17.2%	1.066	0.679	14	2.085	20.6%	1.274	0.811					
M 51	17.656	6	5.838	33.1%	3.452	2.384	9	11.789	66.8%	6.974	4.815	12	0.032	0.2%	0.019	0.013					
M 52	6.953	9	6.953	100.0%	4.508	2.445															
M 53	4.083	8	2.649	64.9%	1.398	1.251	9	0.045	1.1%	0.024	0.021	11	1.388	34.0%	0.733	0.656					
M 55 A	1.544	11	0.610	39.5%	0.402	0.207	12	0.934	60.5%	0.617	0.317										
M 55 B	3.236	11	1.291	39.9%	0.928	0.366	12	1.945	60.1%	1.394	0.551										
MN 1 A	0.472	3	0.172	36.4%	0.098	0.076	4	0.300	63.6%	0.168	0.132										
MN 1 B	2.213	3	0.311	14.1%	0.147	0.164	4	1.841	83.2%	0.870	0.971	6	0.061	2.8%	0.029	0.032					
MN 1 C	2.763	3	0.333	12.1%	0.194	0.139	4	1.164	42.1%	0.679	0.485	6	1.265	45.8%	0.739	0.527					
MN 1 D	0.850	4	0.334	39.3%	0.192	0.142	6	0.516	60.7%	0.296	0.219										
MN 1 E	1.000	6	1.000	100.0%	0.587	0.413															
MN 2 A	0.414	4	0.414	100.0%	0.166	0.248															
MN 2 B	1.045	4	1.045	100.0%	0.542	0.503															
MN 2 C	0.725	4	0.694	95.8%	0.298	0.397	6	0.031	4.2%	0.013	0.018										
MN 3	2.056	4	2.056	100.0%	1.244	0.812															
MN 4	2.161	3	0.688	31.8%	0.363	0.325	4	1.473	68.2%	0.777	0.696										
MN 5	1.481	4	1.481	100.0%	0.896	0.585															