

ANNUAL REPORT

for

OPERATION OF WASTEWATER TREATMENT PLANTS

ADVANCED WASTE TREATMENT

INDUSTRIAL WASTE TREATMENT

TREATMENT OF WASTEWATER FROM ELECTROPLATING, METAL FINISHING AND PRINTED
CIRCUIT BOARD MANUFACTURING

OPERATION & MAINTENANCE OF WASTEWATER COLLECTION
SYSTEMS

WATER TREATMENT PLANT OPERATION

SMALL WATER SYSTEM OPERATION AND MAINTENANCE

WATER DISTRIBUTION SYSTEM OPERATION AND MAINTENANCE

<u>Summary</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>
Manuals Sold	15,419	18,151	27,153
Students Enrolled	3,913	4,859	6,350
Students Completing	2,407	2,606	4,662
Students Dropped	530	416	687
University Credit	248	231	169

Administered and Monitored by

HORNET FOUNDATION OF CALIFORNIA STATE UNIVERSITY, SACRAMENTO

and

DEPARTMENT OF CIVIL ENGINEERING

KENNETH D. KERRI, PROGRAM DIRECTOR

For the

U. S. ENVIRONMENTAL PROTECTION AGENCY

January 1988

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The purpose of this report is to provide a summary of the accomplishments of each program on an annual basis since its inception. All programs are operating on a financially self-sustaining basis.

OPERATION OF WASTEWATER TREATMENT PLANTS (First Edition)

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Percent Completing</u>	<u>CE-12</u>
1972	8063	571	128	82	614
1973	5747	1569	1490	51	389
1974	6523	1144	1717	40	289
1975	4543	804	655	55	164
1976	3992	676	1052	39	119
1977	3280	570	248	70	166
1978	3232	789	310	72	141
1979	3180	881	191	82	103
1980	2444	745	431	63	109
<u>1981</u>	<u>1093</u>	<u>1028</u>	<u>239</u>	<u>81</u>	<u>55</u>
TOTALS:	41,100	8777	4124*	68	2149

Colleges and Universities: 301
Foreign Countries: 32

*From 1979 on only persons who actually started course and did not finish were counted as drops.

OPERATION OF WASTEWATER TREATMENT PLANTS, (Second Edition)

VOLUME I

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Total Percent Completing</u>	<u>CEX-12 A, B, C</u>
1980	1190				19
1981	3960	411	8	98	127
1982	3976	731	181	80	98
1983	2963	655	184	78	76
1984	3347	2087	171	92	66
1985	4064	862	267	76	59
1986	4534	896	155	85	82
1987	<u>5360</u>	<u>1498</u>	<u>262</u>	<u>85</u>	<u>47</u>
TOTAL:	29,394	7140	1228	85	574

VOLUME II

1980	715				4
1981	3023	182			47
1982	3575	309	18	94	45
1983	2438	381	33	92	39
1984	2219	872	35	96	29
1985	2827	454	91	83	25
1986	3161	438	21	95	43
1987	<u>4134</u>	<u>937</u>	<u>72</u>	<u>93</u>	<u>20</u>
TOTAL:	22,092	3573	270	93	252

VOLUME III

1980	428				1
1981	2422	140			58
1982	1898	213	35	86	25
1983	1437	217	33	87	30
1984	1537	430	24	95	12
1985	1525	310	45	87	17
1986	2266	291	30	91	29
1987	<u>1762</u>	<u>322</u>	<u>27</u>	<u>92</u>	<u>15</u>
TOTAL:	13,275	1923	194	91	187

Colleges and Universities: 200

Foreign Countries: 16

In 1987 Volume III was revised and split into two manuals, ADVANCED WASTE TREATMENT and INDUSTRIAL WASTE TREATMENT.

ADVANCED WASTE TREATMENT

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Total Percent Completing</u>	<u>CE-12 E</u>
1987	960	7	0	100	0

Colleges & Universities: 1
Foreign Countries: 0

INDUSTRIAL WASTE TREATMENT

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Total Percent Completing</u>	<u>CE-12 F</u>
1987	941	3	0	100	0

Colleges & Universities: 1
Foreign Countries: 0

**TREATMENT OF WASTEWATER FROM ELECTROPLATING, METAL FINISHING AND
PRINTED CIRCUIT BOARD MANUFACTURING**

(To be renamed TREATMENT OF METAL WASTESTREAMS)

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Total Percent Completing</u>	<u>CE-12D</u>
1986	1281	98	0	100	18
<u>1987</u>	<u>1678</u>	<u>317</u>	<u>9</u>	<u>98</u>	<u>25</u>
TOTAL:	2959	415	9	98	43
GRAND TOTAL:	69,621	13,061	1701	88	1056
Colleges and Universities:		32			
Foreign Countries:		12			

OPERATION AND MAINTENANCE OF WASTEWATER COLLECTION SYSTEMS (First Edition)

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Percent Completing</u>	<u>CE-11</u>
1976	966	3			7
1977	1093	281	8	97	77
1978	759	246	70	78	46
1979	633	179	83	68	34
1980	645	226	53	81	37
1981	680	218	37	85	46
1982	<u>601</u>	<u>265</u>	<u>42</u>	<u>86</u>	<u>23</u>
TOTALS:	5377	1418	292	83	263

SECOND EDITION

1983	583	25	0	100	3
1984	751	97	10	91	10
1985	1103	147	16	90	13
1986	1237	157	31	84	13
1987	<u>1108</u>	<u>329</u>	<u>90</u>	<u>79</u>	<u>9</u>
TOTALS:	4782	755	147	84	48

In 1987 the Second Edition was revised and split into two Volumes.

VOLUME I

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Percent Completing</u>	<u>CE-11A</u>
1987	546	2	0	100	0

VOLUME II

1987	338	0	0	0	0
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Colleges and Universities: 57
Foreign Countries: 9

WATER TREATMENT PLANT OPERATION

VOLUME I

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Percent Completing</u>	<u>CE-18</u>
1983	1469	31	0	100	10
1984	2068	327	27	92	116
1985	2344	355	82	81	69
1986	2391	415	108	79	35
1987	2972	557	143	80	29
TOTALS:	11,244	1685	360	82	259

VOLUME II

1983	183	0	0		1
1984	1331	140	0	100	9
1985	1572	133	7	95	19
1986	1467	163	21	89	6
1987	1916	322	13	96	12
TOTALS:	6469	758	41	95	47

Colleges and Universities: 107
Foreign Countries: 17

WATER SUPPLY SYSTEM OPERATION

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Percent Completing</u>	<u>CE-17</u>
1983	537	0	0		3
1984	1526	140	0	100	13
1985	1957	146	22	87	39
1986	1814	148	50	75	5
1987	399	290	71	80	10
TOTALS:	6233	724	143	84	70

Colleges and Universities: 59
Foreign Countries: 9

In 1987 WATER SUPPLY SYSTEM OPERATION was revised and split into two manuals, SMALL WATER SYSTEM OPERATION AND MAINTENANCE and WATER DISTRIBUTION SYSTEM OPERATION AND MAINTENANCE .

SMALL WATER SYSTEM OPERATION AND MAINTENANCE

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Percent Completing</u>	<u>CE-19</u>
1987	2175	36	0	100	2

Colleges and Universities: 32
Foreign Countries: 3

WATER DISTRIBUTION SYSTEM OPERATION AND MAINTENANCE

<u>Year</u>	<u>Manuals Sold</u>	<u>Successful Completion</u>	<u>Dropped</u>	<u>Percent Completing</u>	<u>CE-20</u>
1987	2864	42	0	100	0

Colleges and Universities: 35
Foreign Countries: 1