

Water Use and Budgeting

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State Water Plan Regional Advisory Committees
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Water Budgeting

- Critical Water Planning Areas (Act 220)
 - “significant hydrologic unit where
 - existing or future demands
 - exceed or threaten to exceed
 - safe yield of
 - available water resources”

Water Budgeting

Watershed water budgeting is the basis
for identifying
Critical Water Planning Areas

Water Budgeting

- Significant Hydrologic Unit
 - Watershed based, i.e., drainage area of a stream
 - River Basin, e.g., Susquehanna River
 - Sub-basin, e.g., West Branch Susquehanna
 - Watershed, e.g., Pine Creek
 - Named streams (8,200)
 - 15 Square Mile Drainage Area; e.g., 5 mi. long, and 3 mi. wide; (3,000)

Water Budgeting

- Existing or Future Demands
 - Non-withdrawal Uses, e.g., aquatic resources, hydropower, recreation
 - Withdrawal Uses, e.g., public water supply, industrial/commercial, agricultural, domestic
 - Registration information from 2003
 - Annual reporting information
 - 2000 Census data
 - 10-year projections to 2050
 - Conservation

Water Budgeting

- Exceed or Threaten to Exceed
 - Full-time Use
 - Seasonal
 - Interruptible

Water Budgeting

- Safe Yield
 - Surface Water
 - Direct Withdrawal – hydrologic record statistic, considering passby flow
 - Storage – hydrologic record statistic, considering conservation release
 - Ground Water – average annual base flow statistic, possibly considering passby
 - Conjunctive Use

Water Budgeting

- Available Water Resources
 - Naturally available
 - Storage
 - Reuse
 - Imports/Exports

Water Budgeting

- Watershed Water Budget
 - Basis for identifying CWPAs
 - “Checkbook Register” balance procedure
 - Deposits – e.g., inflow, precipitation, discharges
 - Withdrawals – e.g., outflow, withdrawal, evapo-transpiration
 - Change in storage

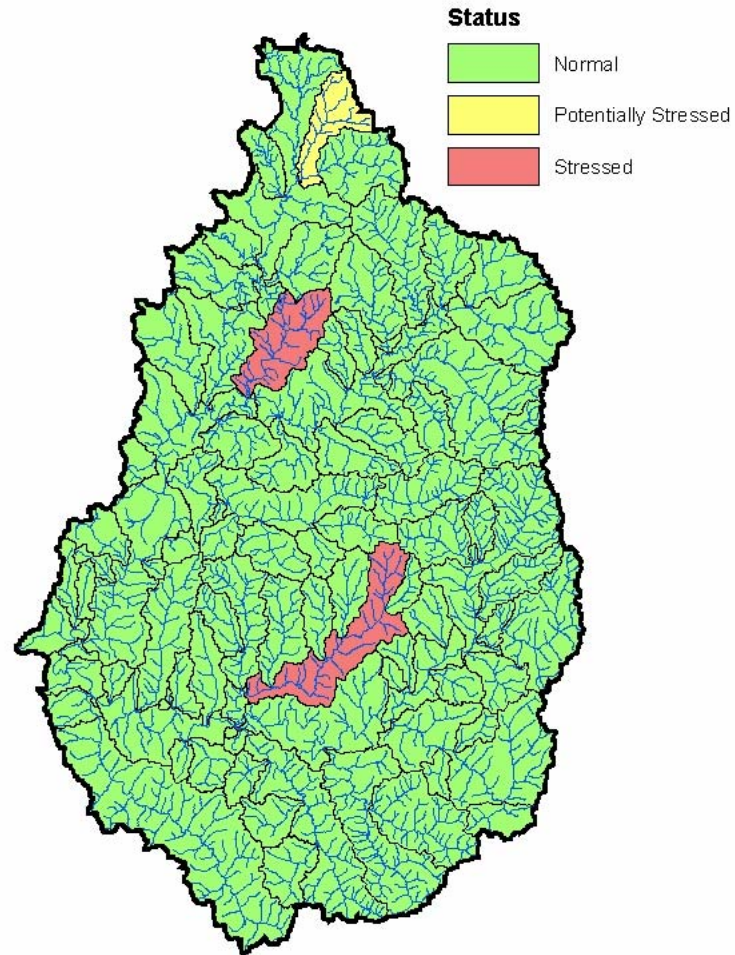
Water Budgeting

- The “Vision”
 - GIS-based
 - Scale-independent
 - Table-based
 - Modular
 - Optional statistics

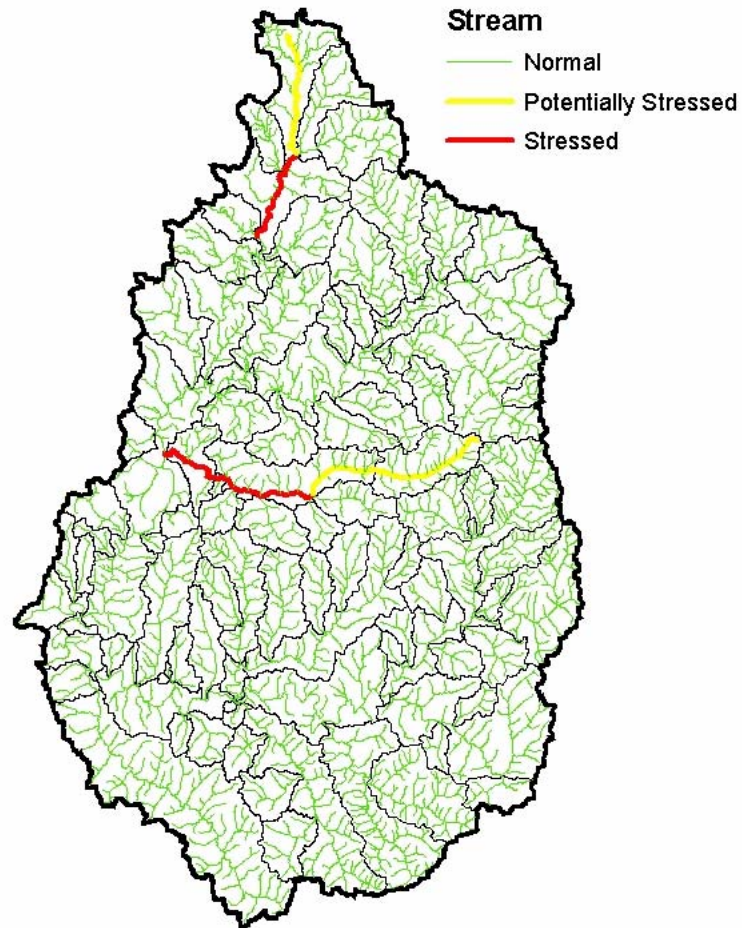
Water Budgeting

- The “Vision” (Continued)
 - Four-component display
 - Surface Water – Watershed
 - Surface Water – Stream
 - Ground Water – Watershed
 - Ground Water – “Dot Map”

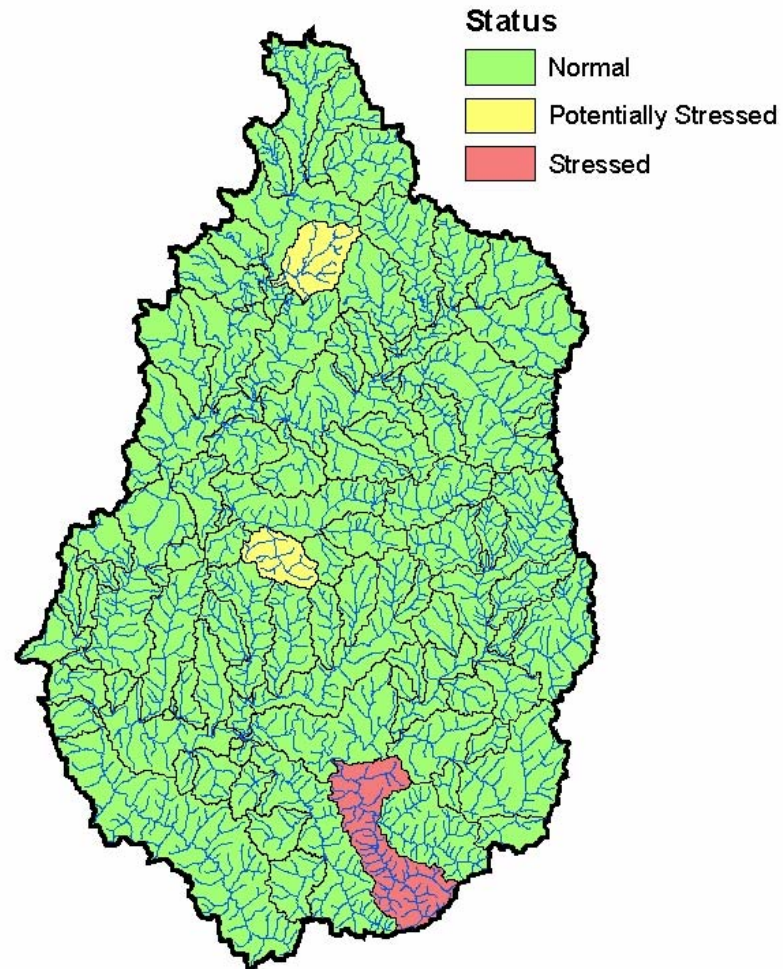
Surface Water -- Watershed



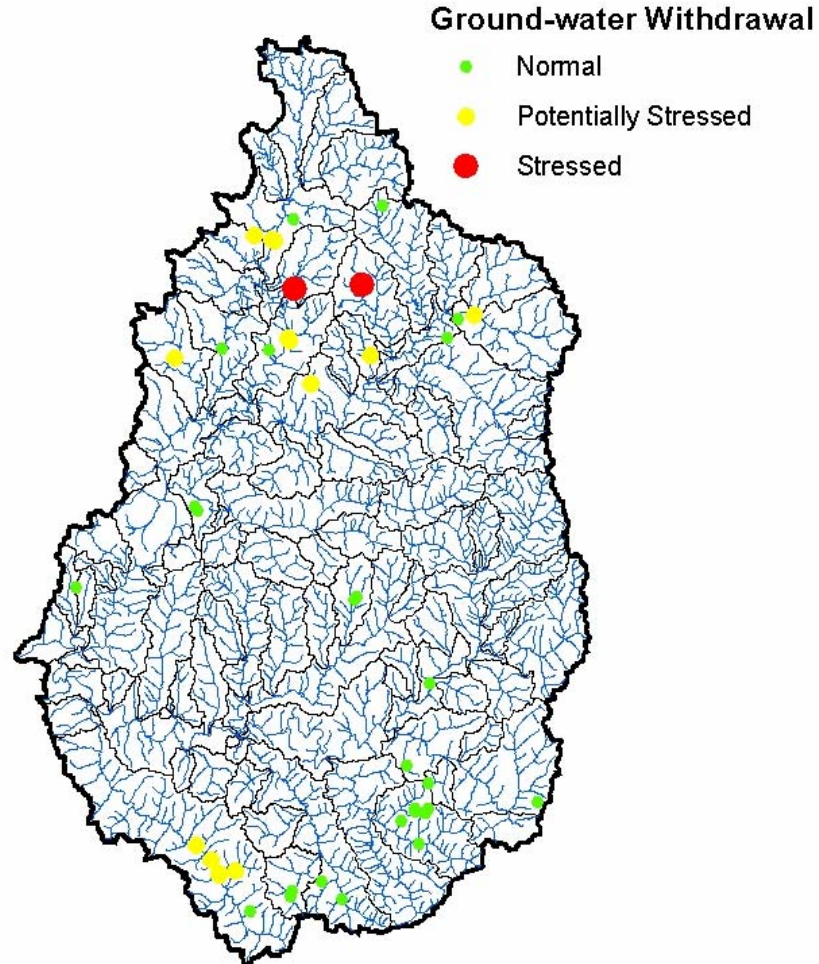
Surface Water -- Stream



Ground Water -- Watershed



Ground Water – “Dot Map”



Water Budgeting

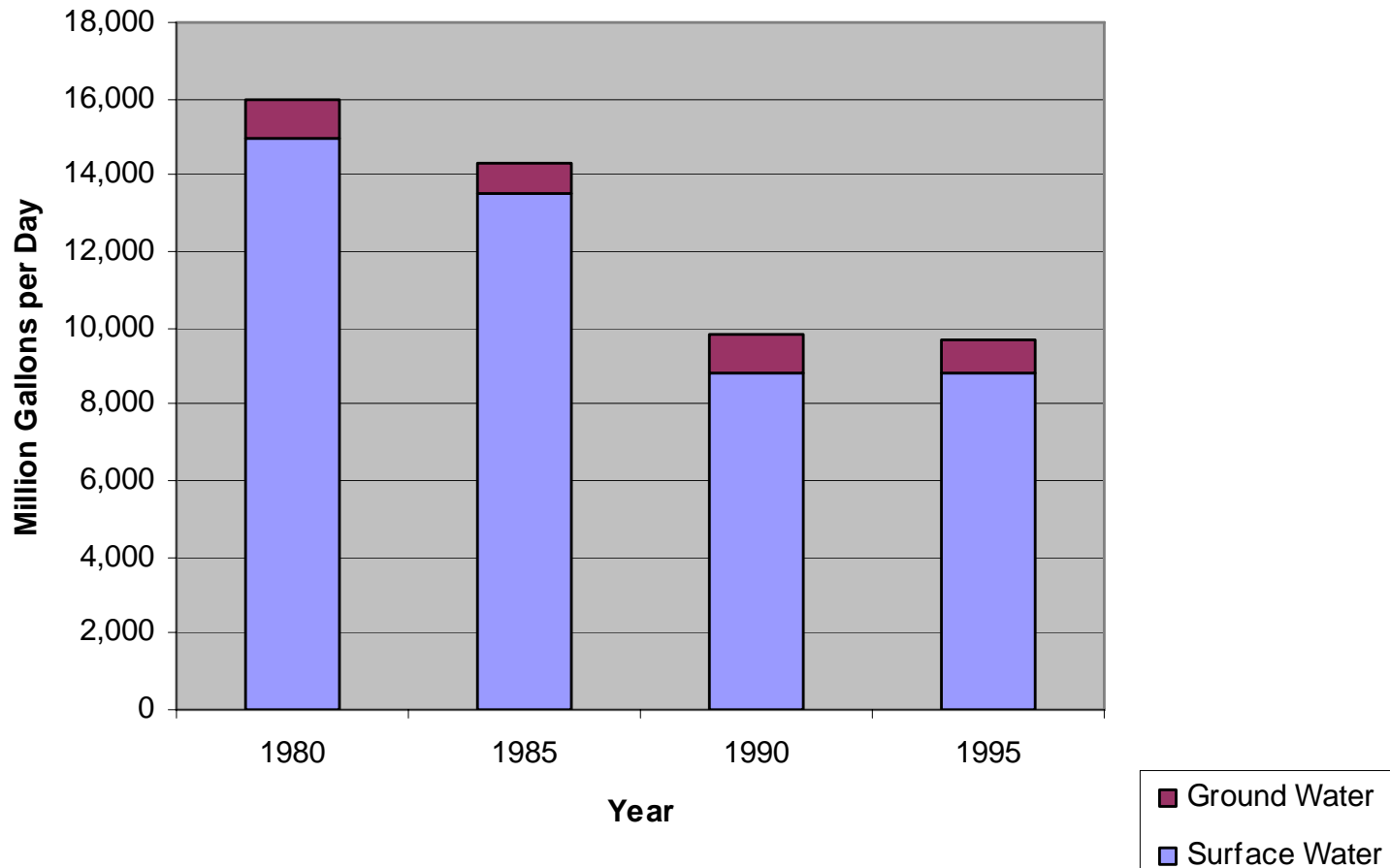
- The “Vision” (Continued)
 - DEP Use
 - Database Manager
 - Table Updates
 - Module Updates

Water Budgeting

- The “Vision” (Continued)
 - SWP Consultant Use
 - Partial Update
 - Module Development
 - Citizen Internet Use
 - Display Only

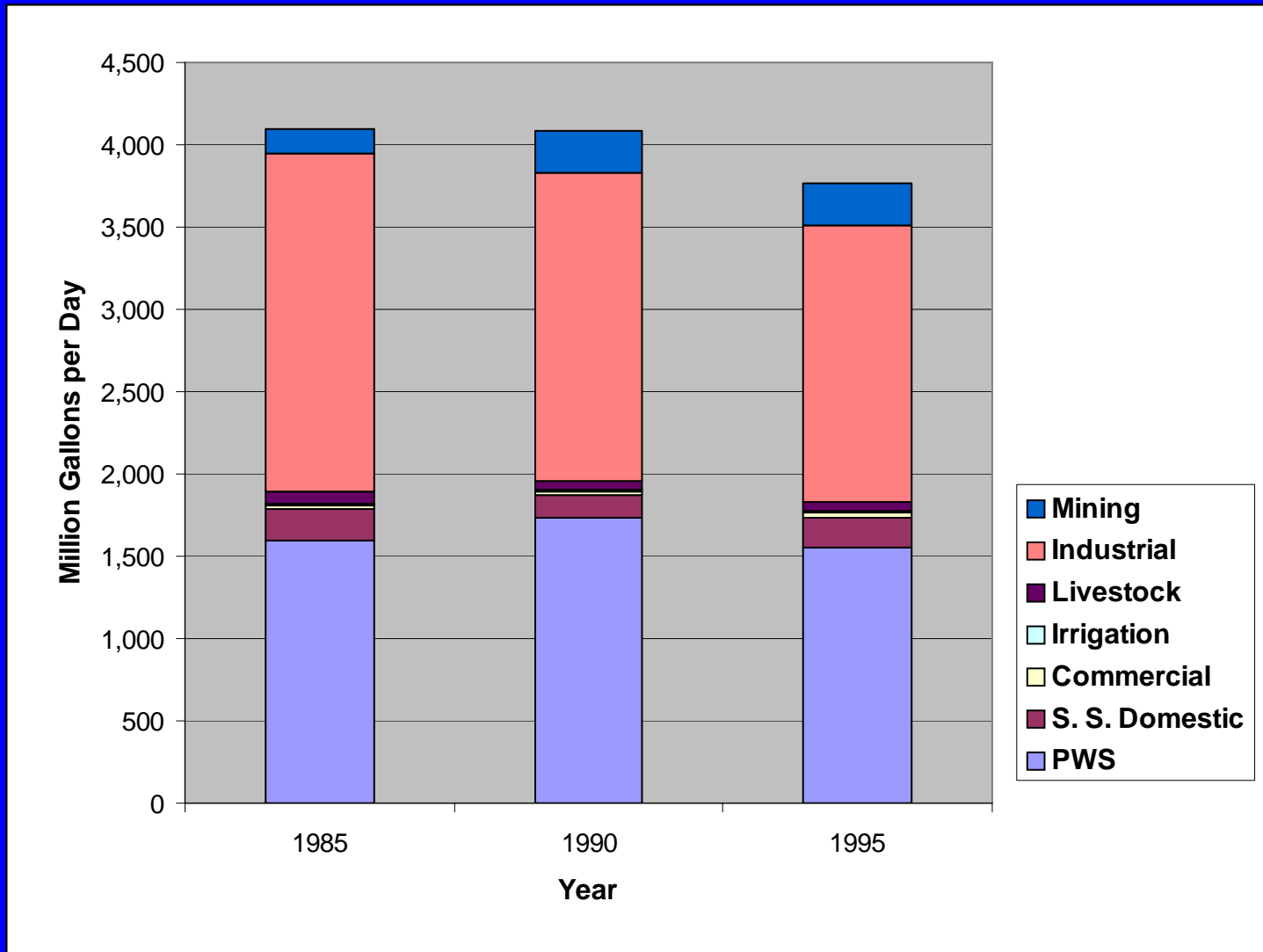
Water Use

Total Withdrawals in Pennsylvania



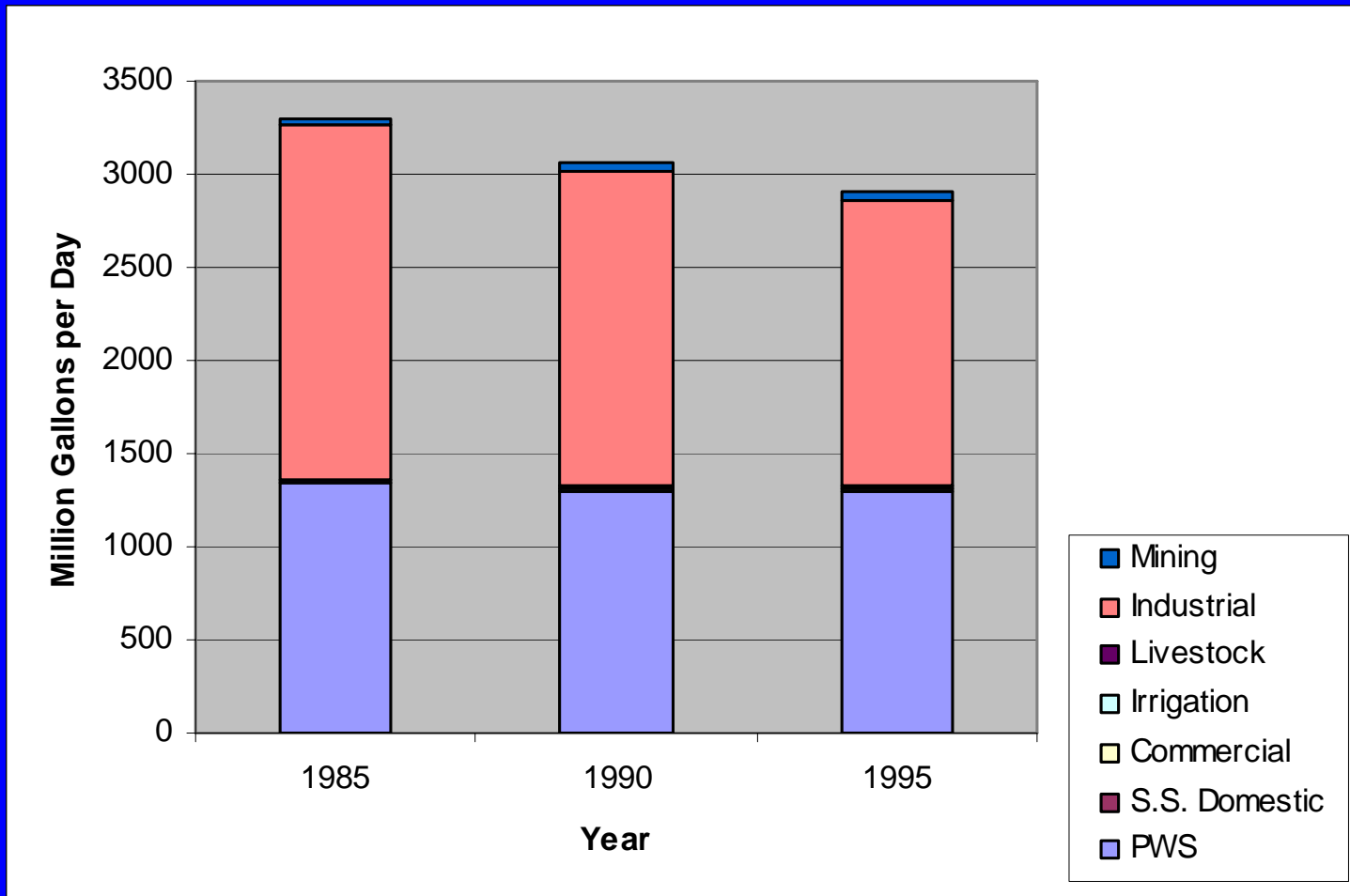
Water Use

Withdrawals by Use Category



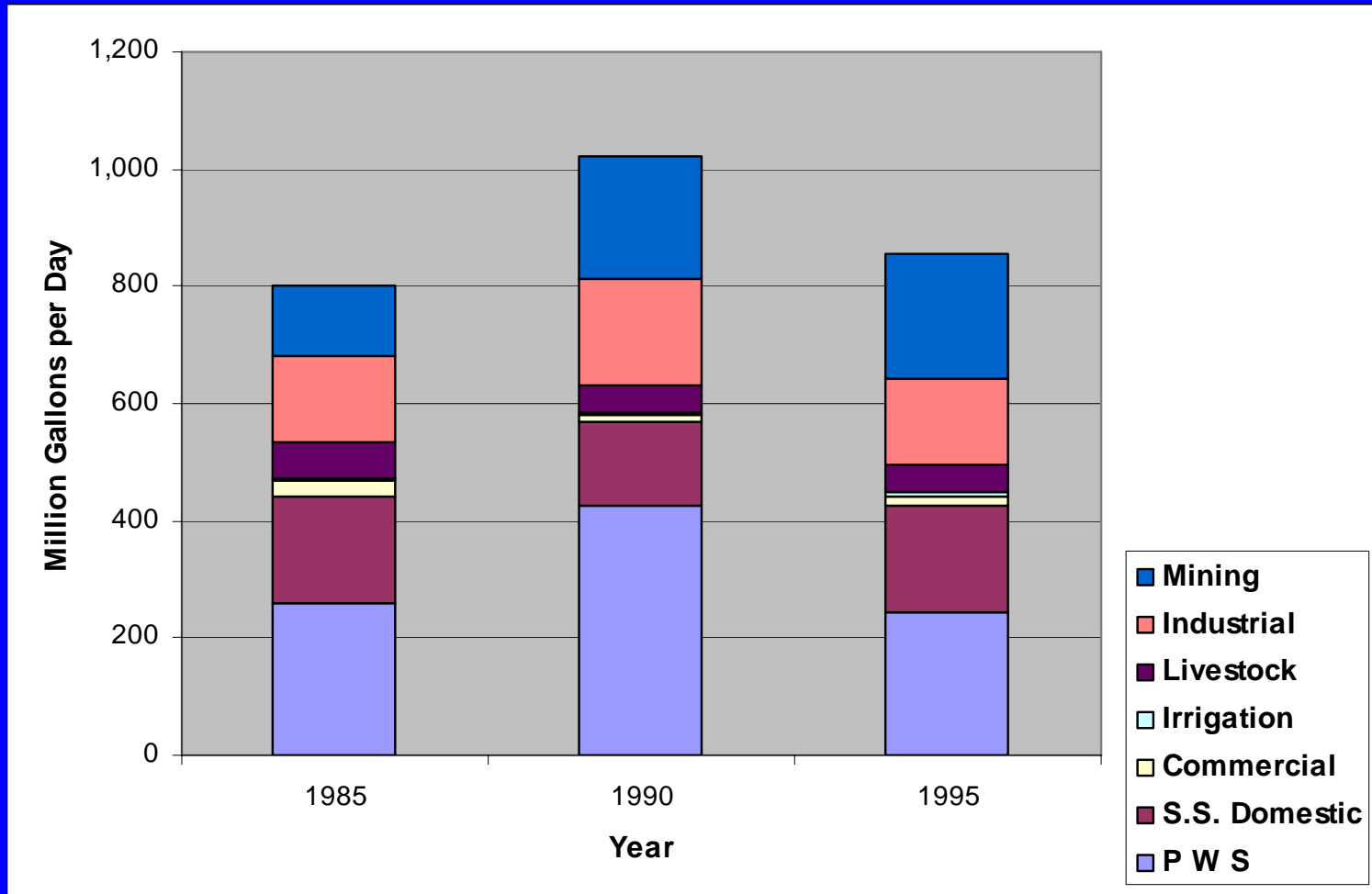
Water Use

Surface Water Withdrawals by Use Category



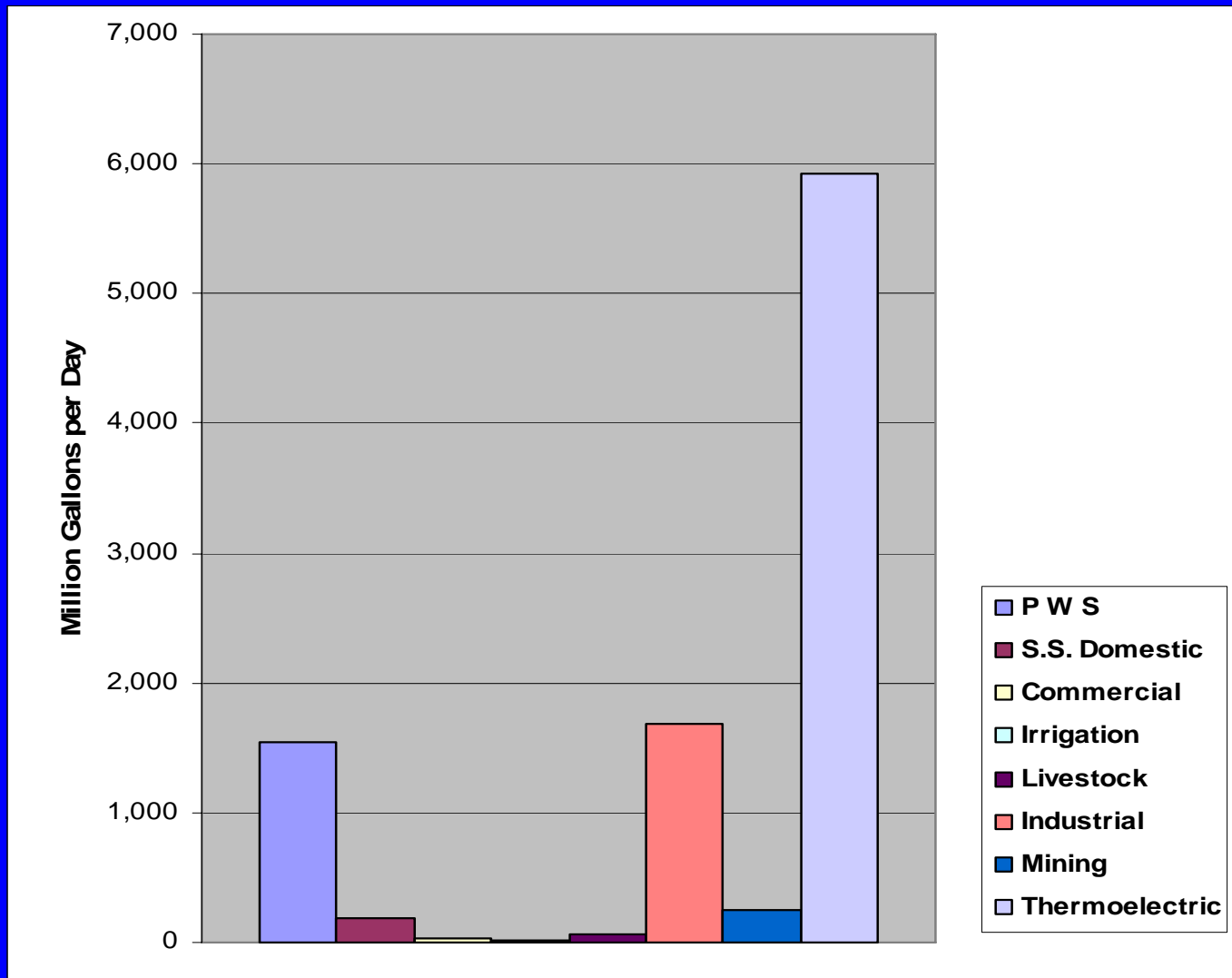
Water Use

Ground Water Withdrawals by Use Category



Water Use

1995 Withdrawals by Use Category



Water Use

Total Withdrawals (mgd)

	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>
Surface	15,000	13,500	8,810	8,820
Ground	1,000	799	1,020	860
Total	16,000	14,300	9,830	9,680

Water Use

Total Withdrawals by Use Category (mgd)

	<u>1985</u>	<u>1990</u>	<u>1995</u>
PWS	1,600	1,730	1,550
Domestic	184	141	181
Commercial	27	24	30
Irrigation	11	14	16
Livestock	70	53	55
Industrial	2,060	1,870	1,680
Mining	148	252	252
Thermoelectric	10,200	5,750	5,920

Water Use

Total Surface Withdrawals by Use Category (mgd)

	<u>1985</u>	<u>1990</u>	<u>1995</u>
PWS	1,340	1,300	1,300
S.S. Domestic	0	0	0
Commercial	0	10	14
Irrigation	9	11	8
Livestock	8	7	7
Industrial	1,910	1,690	1,530
Mining	30	41	41
Thermoelectric	10,200	5,750	5,920

Water Use

Total Ground Withdrawals by Use Category (mgd)

	<u>1985</u>	<u>1990</u>	<u>1995</u>
PWS	258	427	243
S.S. Domestic	184	141	181
Commercial	27	14	16
Irrigation	2	4	8
Livestock	62	46	48
Industrial	149	180	147
Mining	118	211	211
Thermoelectric	0	0	6