

Index

C

- California
 - groundwater rights, 24
 - irrigation story, 10, 54–56
 - State Water Project (SWP), 9, 12, 26
 - surface water rights, 20–25, 27, 30, 34
 - water right proclamation, 24, 91
- Central Valley Project (CVP), 9, 11–18, 25–28, 40, 48, 56
- Conjunctive use, 23, 36, 55, 87–88

D

- Dimethylselenide (DMSe), 152, 154, 159, 165, 194
- Dimethylselenopropionate (DMSeP), 154

E

- Evaporation ponds
 - aquatic food chain, 199–201, 205
 - compensation habitat, 230, 235, 241
 - evapoconcentration process, 185, 187–191, 195
 - mitigating harmful effects, 193
 - salinity, 188–192
 - sediments, 186–188, 192–198, 204, 205
 - water quality, 186–188, 192
 - wildlife, 212–215

F

- Frankenberger-Karlson Process, 165

H

- Hilgard, irrigation management, 8, 9
- HYDRUS-2D, 260

I

- Integrated on farm drainage management, 37–38, 41, 67, 280
- Irrigation
 - best management practice, 250, 269, 272–274
 - drip, 255–263, 267–270, 272, 273
 - economics, 9, 268–270
 - furrow, 252–256, 262–264, 268, 272
 - pre-plant, 250, 253–256, 262, 264–269, 272, 274
 - sprinkler, 253, 254, 268–270, 272
 - sustainable, 32, 36, 43, 90, 114, 269, 271, 272, 381–384, 401, 403
 - water management simulation, 70–78, 249–274

L

- Land retirement, 9, 18, 37, 39, 43, 353, 354, 360, 376

M

- Mathematical models
 - expert system, 71
 - farm scale model, 260–261, 285–288
 - optimization model, 114, 361–362, 370–372

Mathematical models (*cont.*)

- reactive chemical transport model, 74, 81, 109–110
- regional model, 72, 109–110, 113, 114, 118
- regional planning model, 76–77
- regional process model, 71–72

R

- Reverse osmosis, 306–317
 - agricultural drainage water, 305, 329–330
 - high recovery process, 329–331
 - membrane selection, 314–317, 331
 - mineral scaling, 304, 316–322, 324, 329
 - product water recovery, 304, 308, 322, 324, 326–327, 329, 330, 334–335
 - water pre-treatment, 309

S

Salinity

- Australia, 382, 384, 387, 391–393
- economic efficiency, 356, 360, 364–367, 369, 372
- halophytes, 280, 296
- institutional issues, 383
- international perspectives, 386–403
- management options, 17, 37
- Pakistan, 384, 387–391
- policy analysis, 367–369, 397
- policy issues, 395
- salt tolerant plants, 280, 291–296
- Turkey, 382, 384, 387–391, 393–397

Salt and selenium

- monitoring and instrumentation, 69–70
- regional scale, 5–6, 32–33, 58–60, 84–87
- toxicity, 215
- water chemistry, 118–194

San Joaquin Valley, 3–4

- drainage water desalination, 305, 306, 322, 334
- evaporation ponds, 38, 41, 67, 140, 186–199, 303
- geology, 47–49, 83
- hydrogeochemistry, 53, 68, 83
- hydrogeology, 49–53, 57
- irrigated agriculture, 1, 9–12, 19–20, 23–29, 51, 54, 56, 78, 116, 382
- salt balance, 84–87
- westside, 48, 55–70, 77, 87, 91, 104–120, 124, 133, 361
- wetlands, 343–345

- San Luis Drain, 12, 17, 28–32, 34, 35, 54, 66, 86, 185, 351, 386

Scale, 101

- Scaling
 - diffusion, 112
 - models, 104, 114–116
 - soil hydraulic function, 105–107
 - water flow and transport, 113
 - water use efficiency, 118–120

Selenium

- adsorption and precipitation, 127–129
- biomethylation, 165, 194, 195
- chemical forms, 165, 181
- harmful effects to birds, 5, 32–33, 202, 218
- hyperaccumulator plants, 149–152, 154–155
- metabolism in plants, 152, 155
- organic, 134, 152, 154, 156, 165, 193, 296
- phytoremediation, 147, 158

Selenium reducing bacterial species, 167

Selenocysteine (SeCys), 152, 154–156, 202

Selenomethionine (SeMet), 152–154, 156

Subsidence, 12, 23, 25, 26, 51, 84, 88, 110–112

Subsurface tile drains, 31, 66, 82

- best management practice, 264
- designs, 249, 250, 270
- water reuse, 262–264, 271, 274

T

Trace elements

- arsenic, 125, 131, 194–196
- boron, 125, 126, 141–142
- evaporation ponds, 137, 139–142, 192–198
- molybdenum, 125, 136–139
- selenium, 123, 131–136, 192–194
- uranium, 125, 128, 130, 139–142
- vanadium, 125, 141

V

Volatilization

- arsenic, 131
- selenium, 131, 152–155, 166, 194, 200

W

Water laws

- California Environmental Quality Act, 13, 22, 30, 215
- California Irrigation District Law, 11, 19

- California Water Commission Act, 11, 23
- Federal Clean Water Act, 13, 30, 31
- Federal Homestead Act of 1862, 19
- National Wildlife Refuge
 - Administration Act, 13, 32
 - Porter-Cologne Water Quality Control Act, 13, 29, 397
 - Reclamation Act of 1902, 11, 25, 55
- Wetland plant communities, 346
- Wetland salt management, 347–350