



Attachment 3

Update on Southeastern Wisconsin Regional Water Supply Study

Environmental Justice Task Force

October 14, 2008

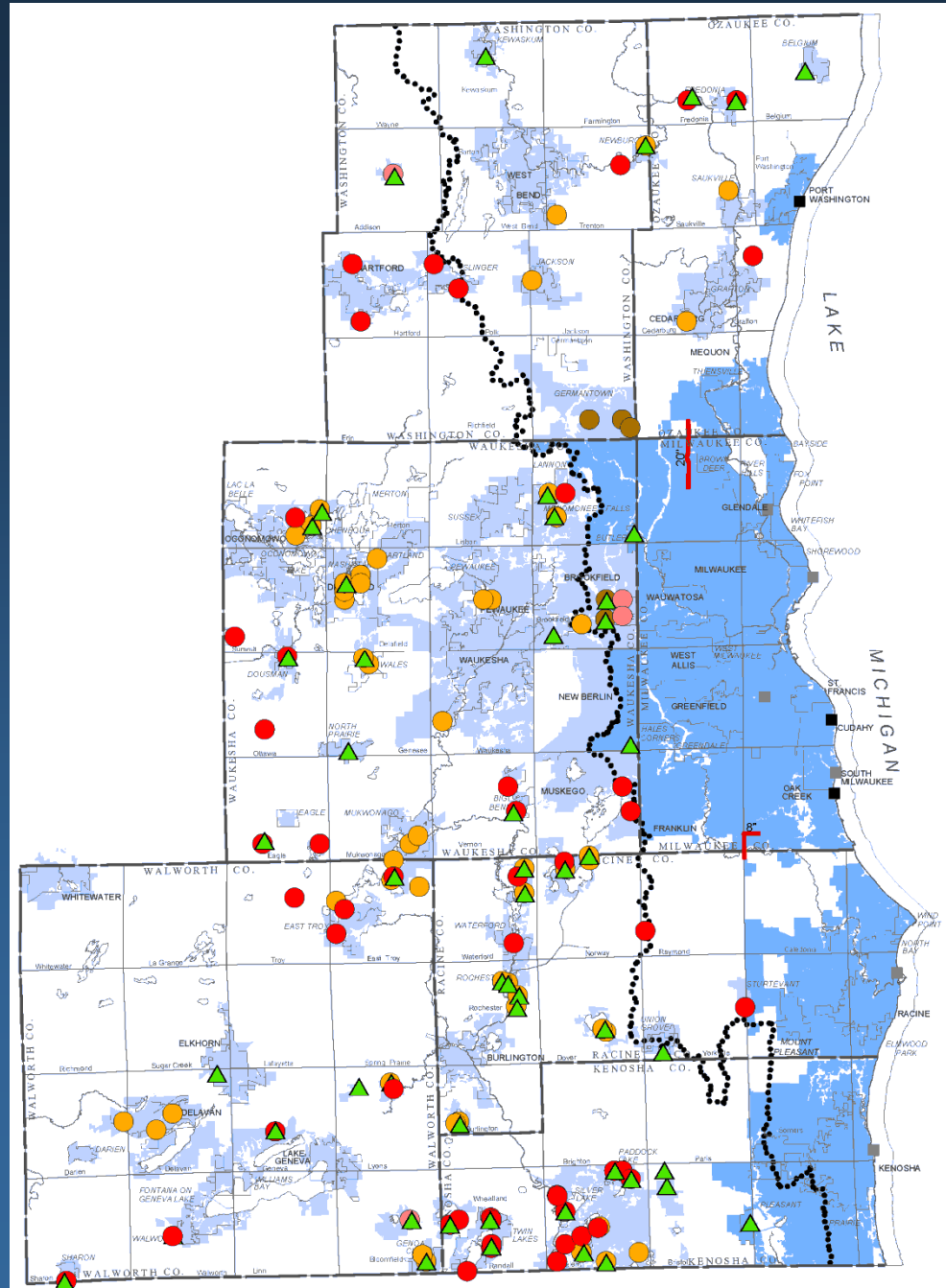


Update

- **Review of 4 Alternative Plans**
- **Results of Test and Evaluation of 4 Alternative Plans**
- **Composite and Preliminary Recommended Plan**
- **Environmental Justice Considerations**

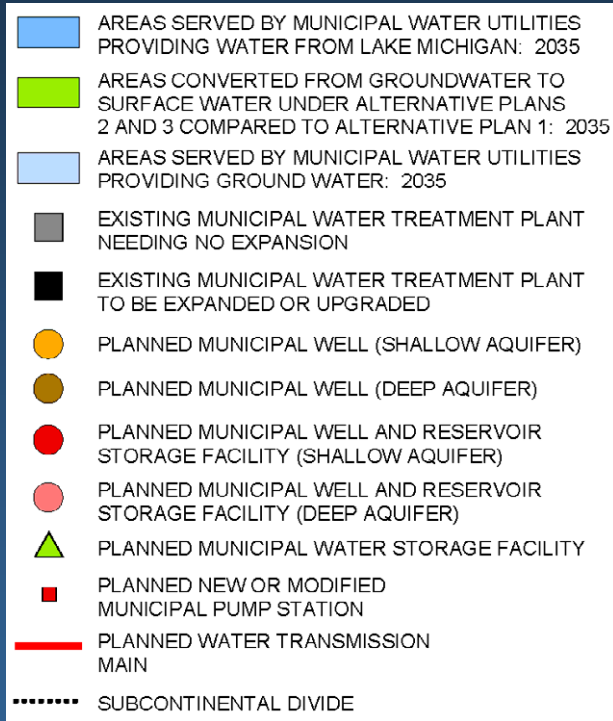
Regional Water Supply Plan

Alternative Plan 1 – Design Year 2035 Forecast Conditions Under Existing Trends and Committed Actions

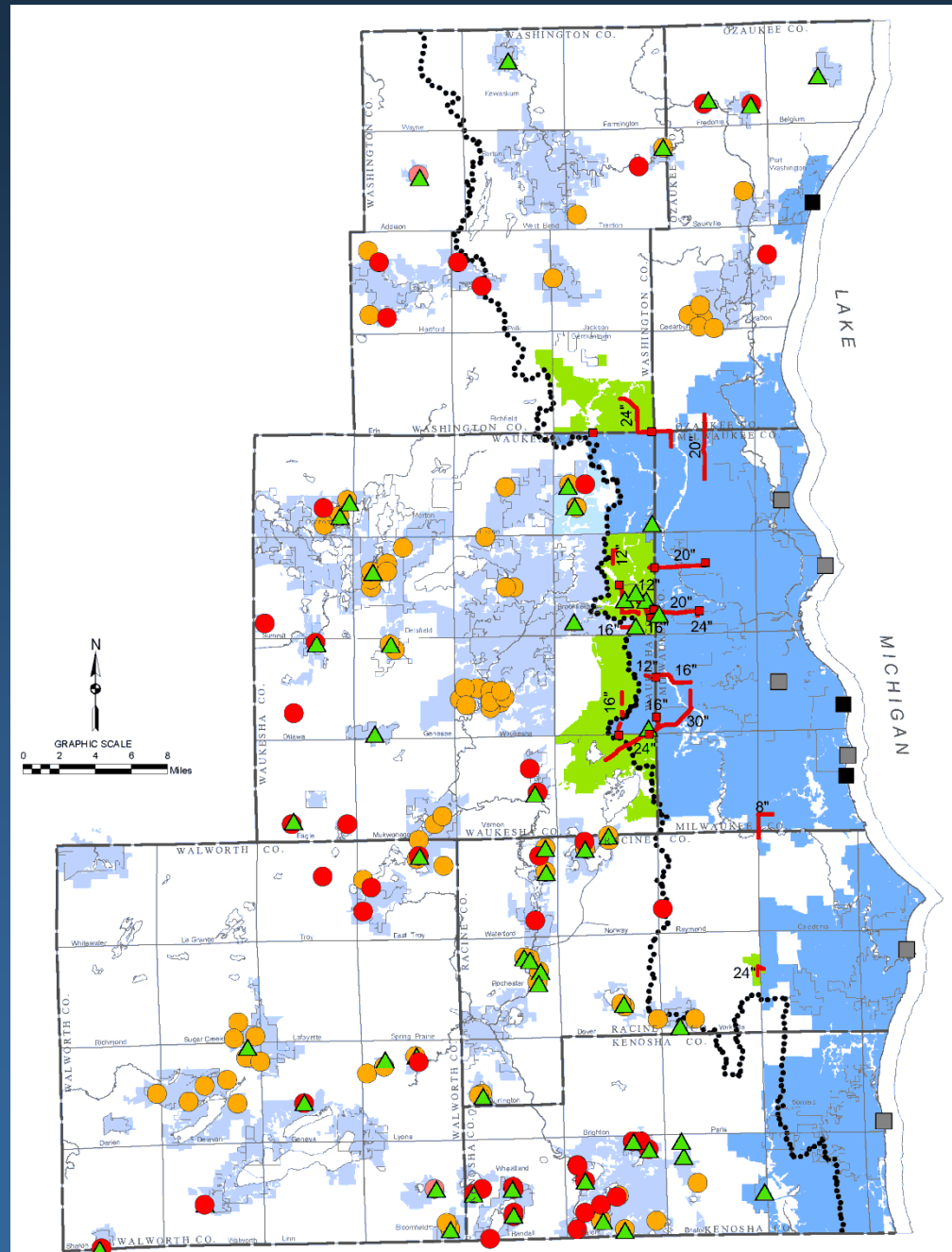


- Existing 2007 water supply facilities
- Enhanced local water conservation programs
- Continued reliance on groundwater sources to meet 2035 demand (light blue)
- Continued reliance on Lake Michigan water sources for all areas now served, meeting 2035 demand (dark blue)
- Recharge of groundwater at new construction sites to the extent required by State law
- Continued reliance on private wells for residential areas (about 180,000 persons) plus selected agricultural, irrigation, and industrial uses

Alternative Plan 2 – Limited Expansion of Lake Michigan Supply

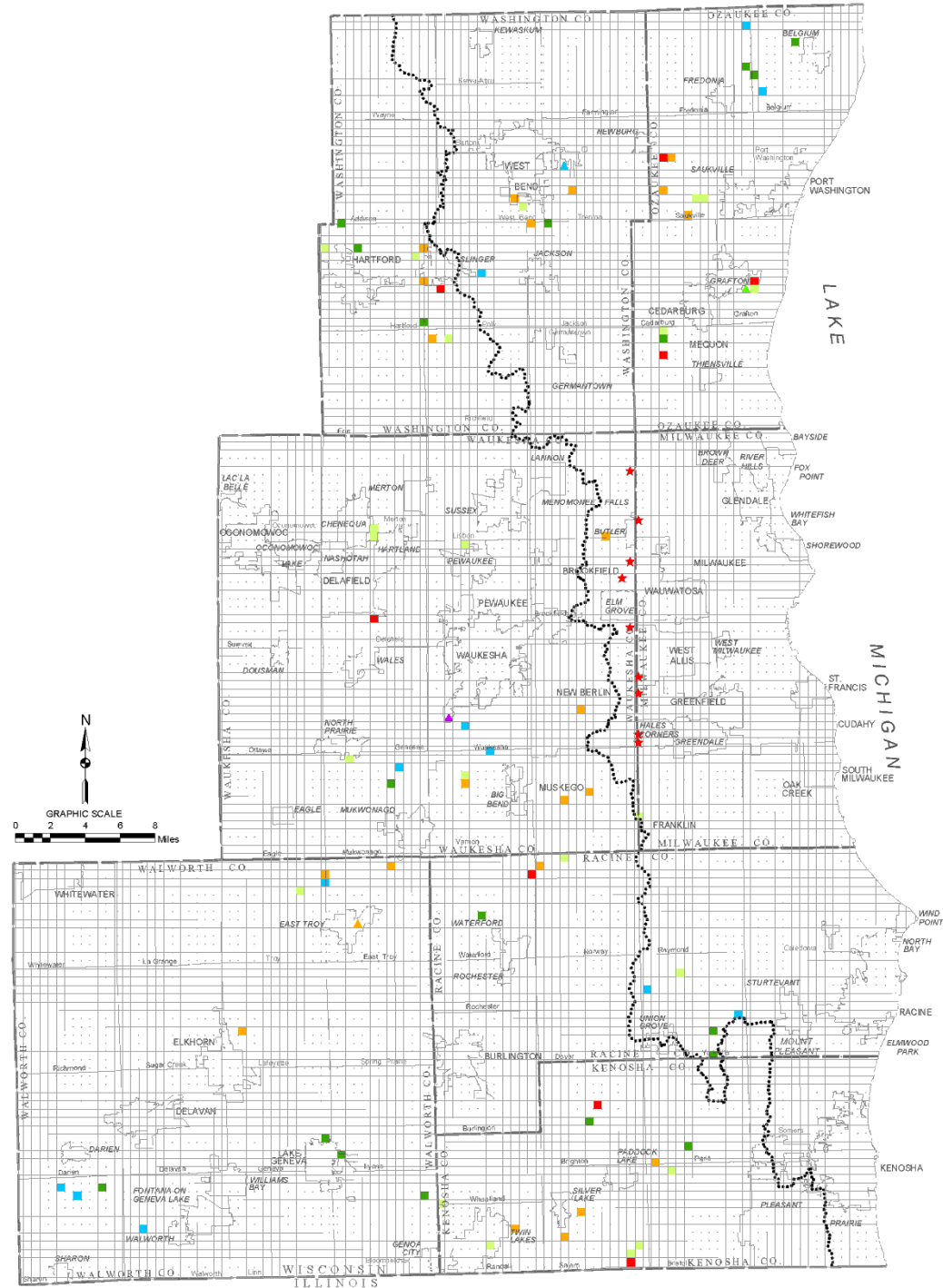
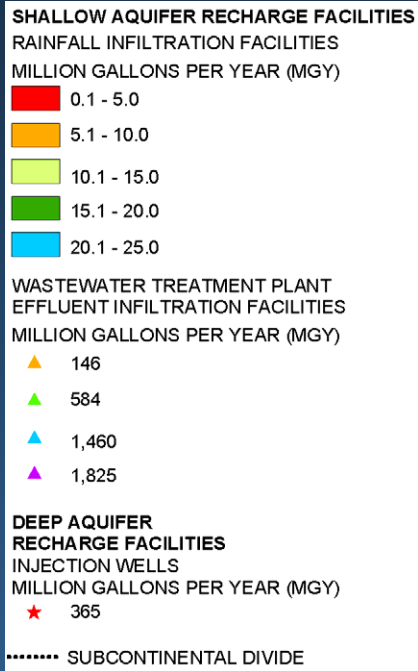


- **Includes most aspects of Alternative Plan 1, but converts certain areas to Lake Michigan supply**
 - **4 areas east of the subcontinental divide (Germantown, Elm Grove, Brookfield-east, and Yorkville) all with existing return flow (green)**
 - **2 areas west of the divide (New Berlin-central, Muskego) both with existing return flow (green)**
 - **Includes conversion of selected treated deep aquifer sources to shallow aquifer sources**



Regional Water Supply Plan

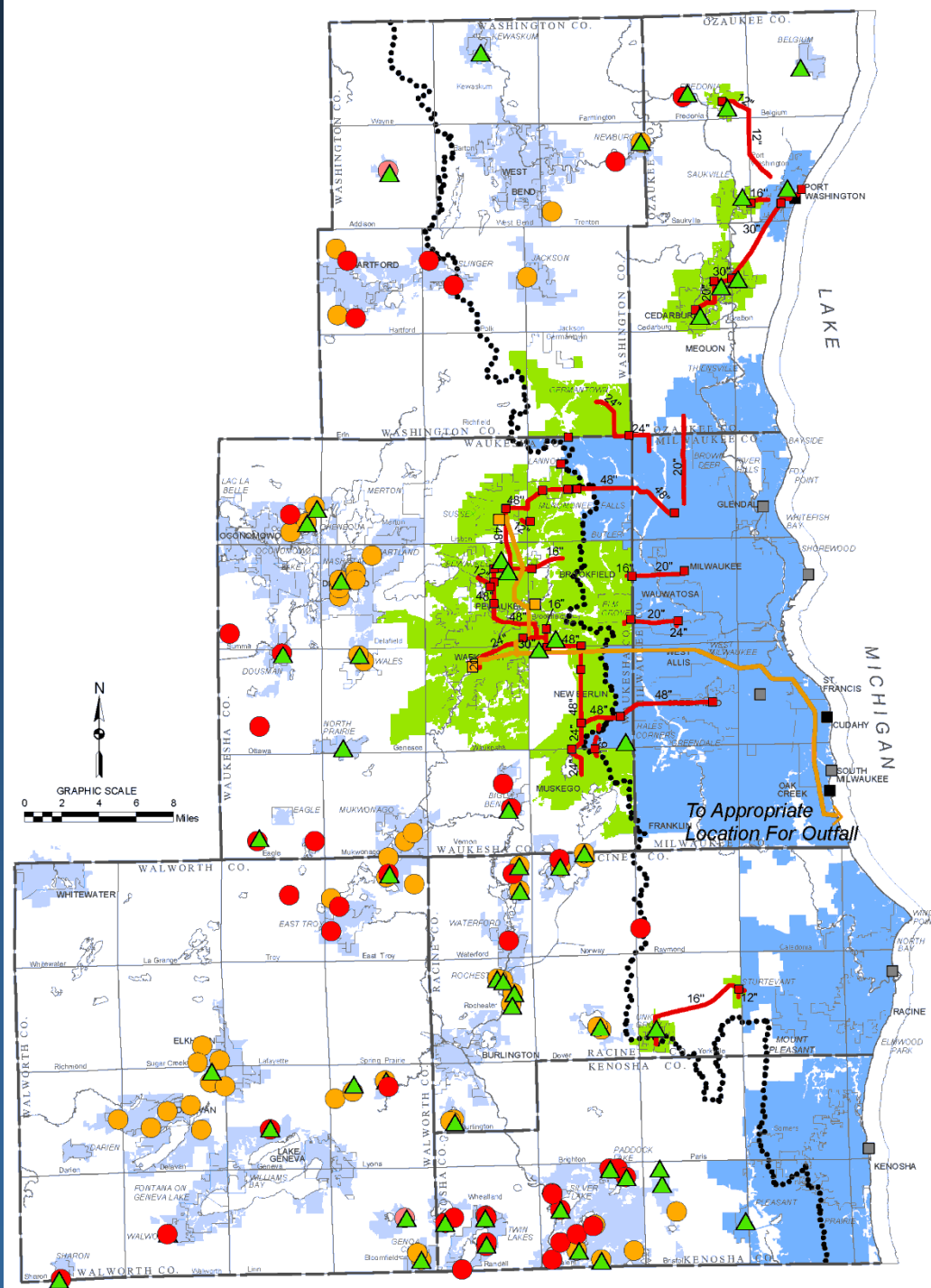
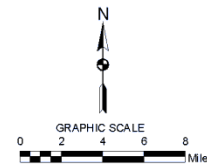
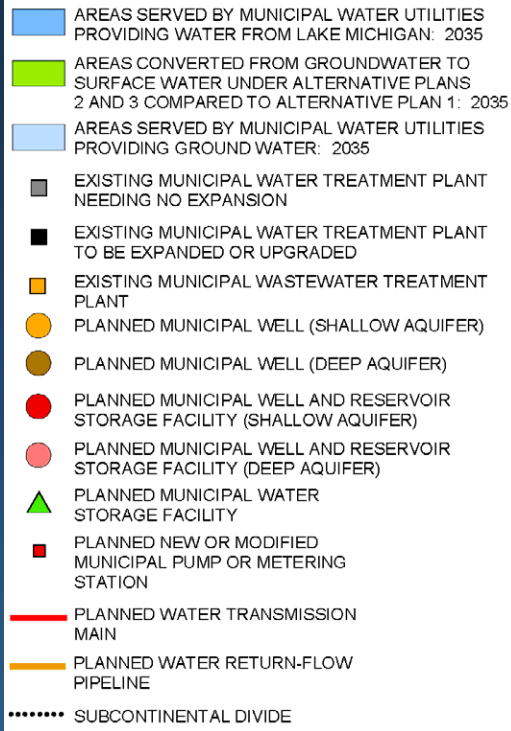
Alternative Plan 3 – Groundwater Recharge



- Includes all aspects of Alternative Plan 2
- Enhancement of rainfall infiltration over 4.0 square miles of open space through bioengineering; sites to be selected
- Protection of most significant groundwater recharge areas through public purchase if necessary
- Recharge of groundwater at new construction sites beyond the extent required in State law
- Redirection of wastewater treatment plant effluent to shallow aquifer after enhanced treatment at 3-4 demonstration locations
- Recharge deep aquifer with treated Lake Michigan water

Regional Water Supply Plan

Alternative Plan 4 – Further Expansion of Lake Michigan Supply



- Includes all aspects of Alternative Plan 2 but with conversion of selected additional areas to Lake Michigan supply all with return flow components
- 4 areas east of the subcontinental divide (Cedarburg, Grafton, Fredonia, Saukville) (green)
 - 4 areas in communities which straddle the divide (Brookfield-west, Menomonee Falls-west, Brookfield-Town, Union Grove) (green)
 - 9 areas which are in communities west of the divide within a straddling county (Pewaukee-City, Pewaukee-Village, Sussex, portion of the Town of Lisbon, Lannon, Waukesha-City, portions of the Towns of Waukesha, Genesee, and Delafield) (green)

Four Alternative Plans

Test and Evaluation Results-Summary

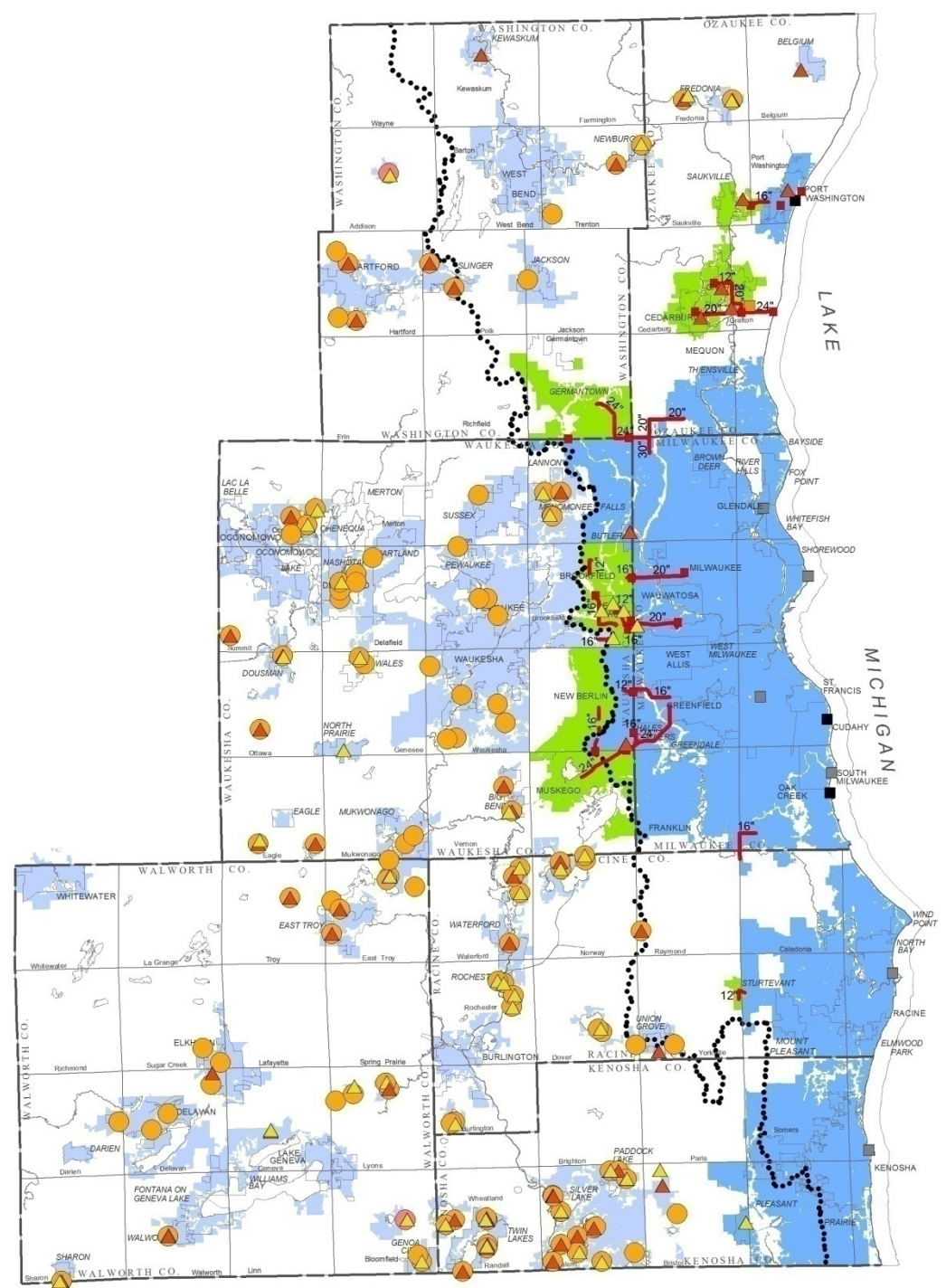
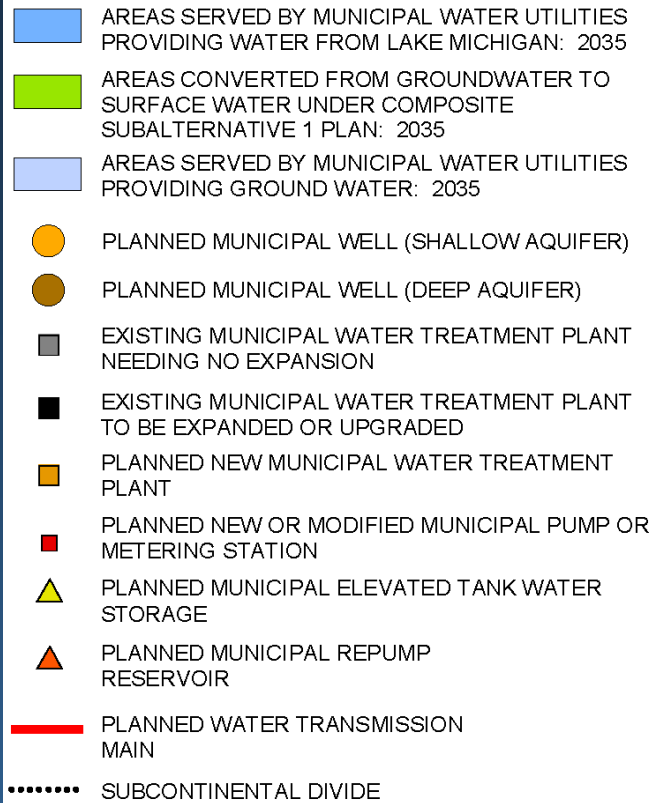
	Capital Costs	Annual Operating and Maintenance Cost	Equivalent Annual Cost	Deep Aquifer Impact	Shallow Aquifer Impact	Surface Water Impact
Alternative Plan 1	\$172 million	\$5.1 million	\$11.3 million	Significant slowdown in the drawdown of the deep aquifer	Localized impact around community wells	4.5% reduction in groundwater derived baseflow
Alternative Plan 2	\$222 million	\$3.2 million gross -\$3.3 million net*	\$6.5 million	Drawup in the deep aquifer	Localized impact around community wells	5.3% reduction in groundwater derived baseflow
Alternative Plan 3	\$370 million	\$8.6 million gross \$2.1 million net*	\$13.1 million	Drawup in the deep aquifer	Localized impact around community wells	1.7% reduction in groundwater derived baseflow
Alternative Plan 4	\$478 million	\$7.3 million gross -\$14.4 million net**	\$18.0 million	Drawup in the deep aquifer	Localized impact around community wells	0.7% reduction in groundwater derived baseflow

*Includes a credit of \$6.5 million for reduced household water softening costs.

**Includes a credit of \$21.7 million for reduced water softening costs.

Regional Water Supply Plan

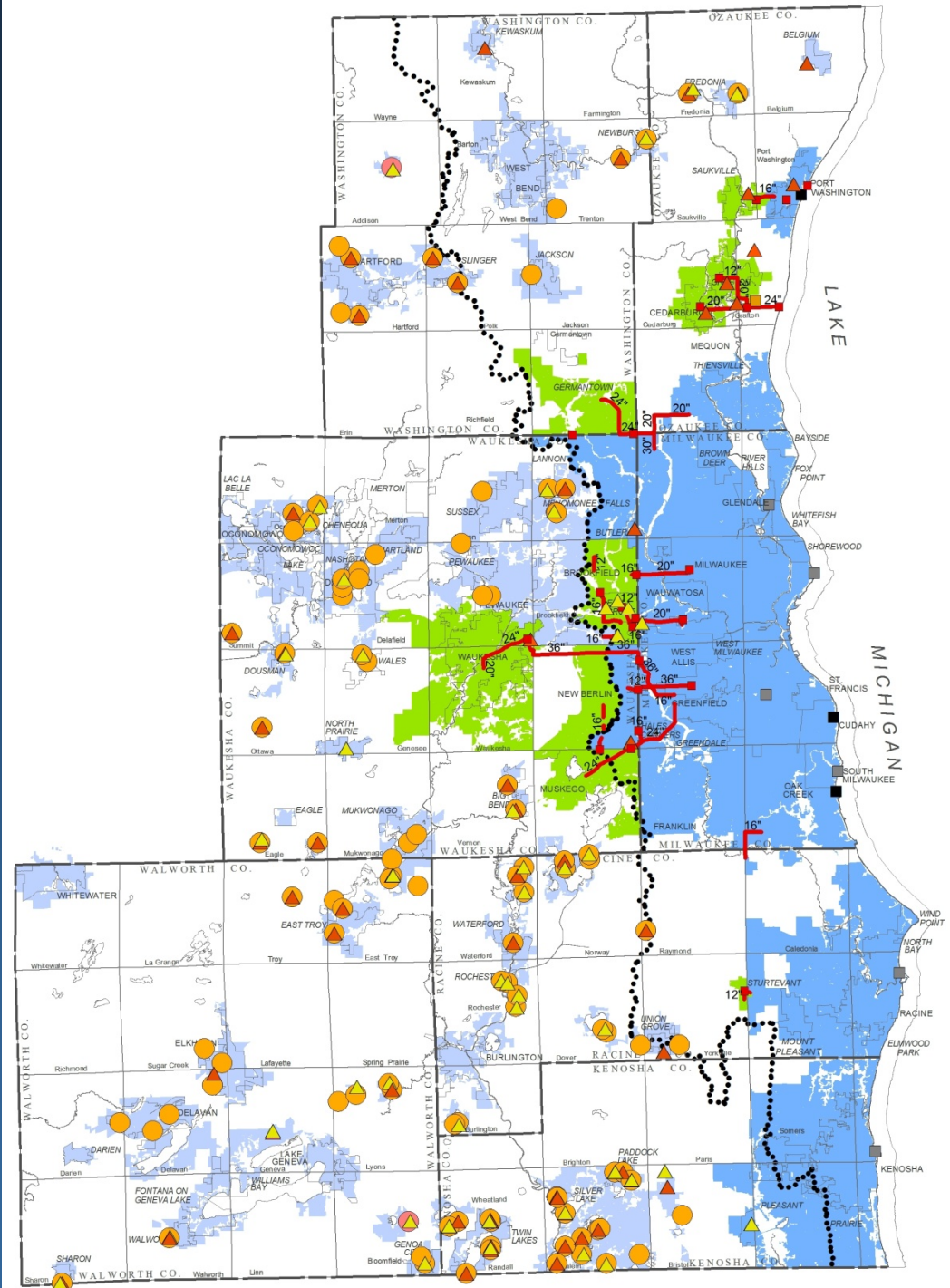
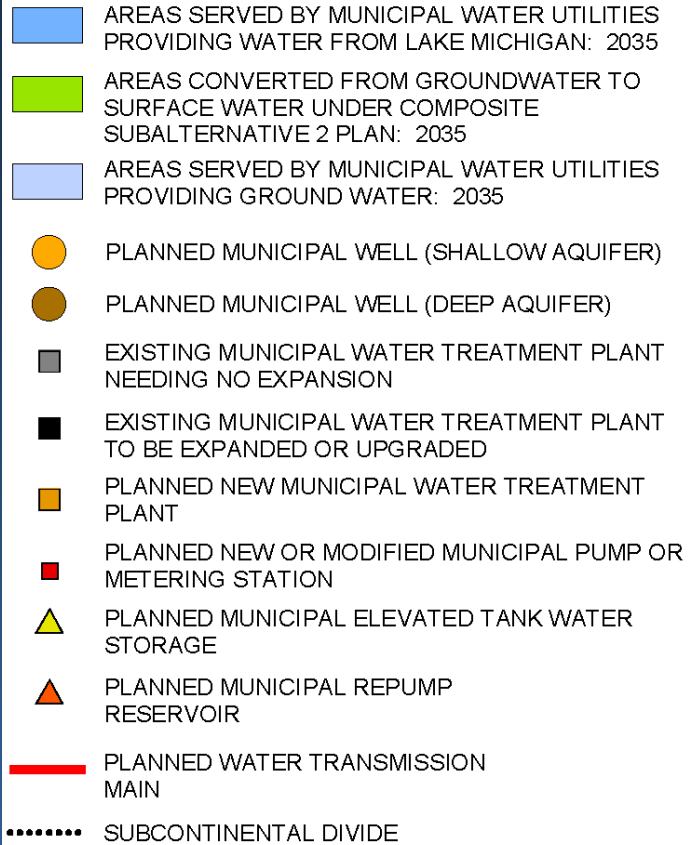
Subalternative 1 to the Composite Plan:



- Enhanced local conservation programs
- Conversion of selected areas with current return flow to Lake Michigan supply
- Conversion of selected groundwater supply from deep to shallow aquifer supply
- Enhancement of rainfall infiltration over 2.0 square miles of open space through bioengineering
- Continued reliance on private wells for selected residential areas (about 180,000 persons plus selected agricultural, irrigation, and industrial uses)

Regional Water Supply Plan

Subalternative 2 to the Composite Plan:

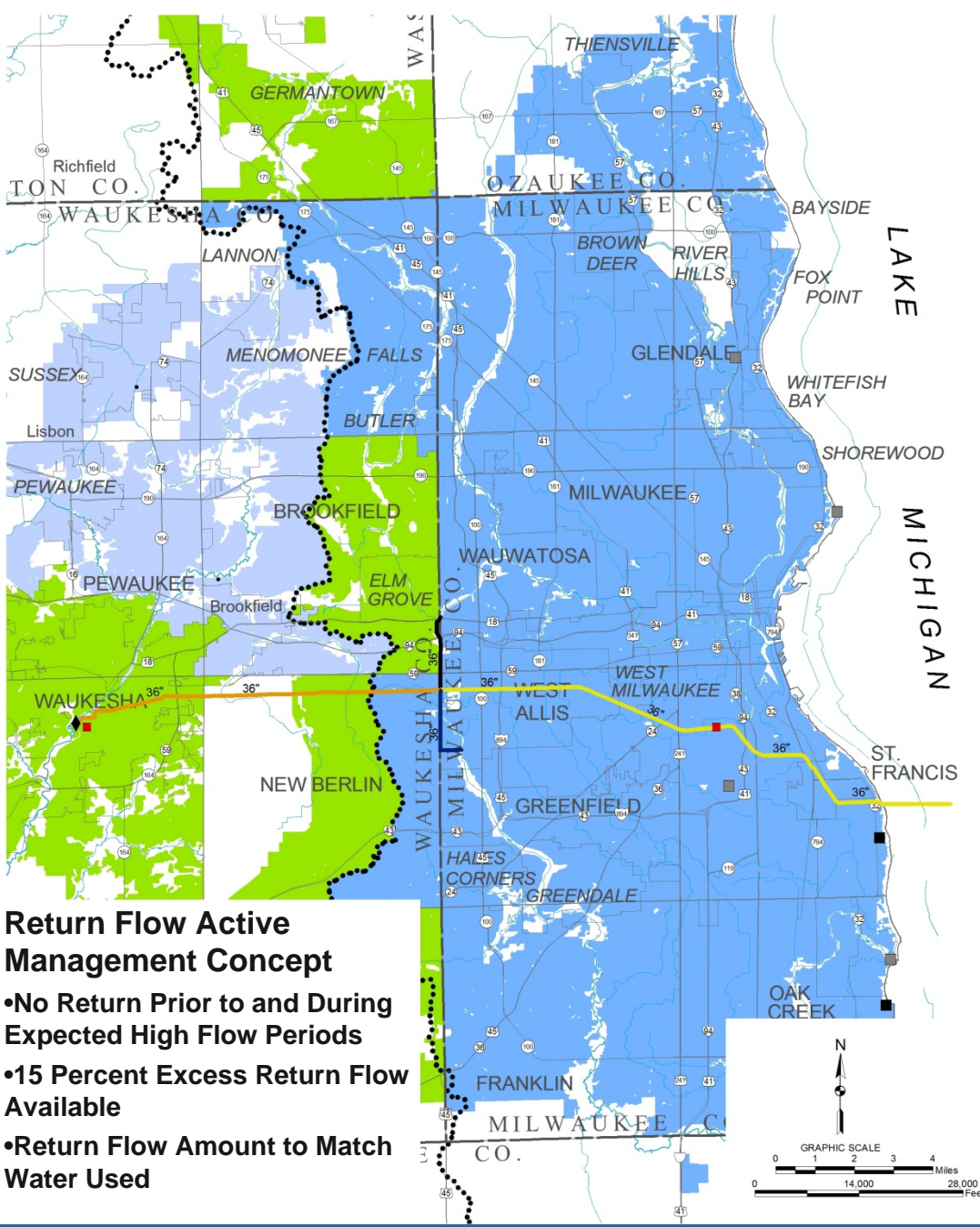


➤ Includes all aspects of subalternative 1 to the composite plan except:

- The city of Waukesha water utility is converted to a Lake Michigan supply with a return flow component
- The enhanced rainfall infiltration acreage is reduced from 2.0 to 1.7 square miles

Options 1 – 4 for Return Flow for Subalternative 2 to the Composite Plan: Return Flow Pipelines to Lake Michigan, Underwood Creek, and Root River

- AREAS SERVED BY PUBLIC WATER UTILITIES PROVIDING WATER FROM LAKE MICHIGAN UNDER ALTERNATIVE PLAN 1: 2035
- AREAS CONVERTED FROM GROUNDWATER TO SURFACE WATER UNDER ALTERNATIVE PLANS 4 COMPARED TO ALTERNATIVE PLAN 1: 2035
- AREAS SERVED BY PUBLIC WATER UTILITIES PROVIDING GROUNDWATER: 2035
- EXISTING MUNICIPAL WATER TREATMENT PLANT NEEDING NO EXPANSION
- EXISTING MUNICIPAL WATER TREATMENT PLANT TO BE EXPANDED OR UPGRADED
- EXISTING MUNICIPAL WASTEWATER TREATMENT PLANT
- PLANNED NEW PUMPING STATION
- PLANNED WATER RETURN FLOW PIPELINE: OPTIONS 1, 2, 3, AND 4
- PLANNED WATER RETURN FLOW PIPELINE: OPTION 1
- PLANNED WATER RETURN FLOW PIPELINE: OPTION 2 AND 4
- PLANNED WATER RETURN FLOW PIPELINE: OPTION 3 AND 4
- SUBCONTINENTAL DIVIDE



Composite Plans

Test and Evaluation Results-Summary

	Capital Costs	Annual Operating and Maintenance Cost	Equivalent Annual Cost	Deep Aquifer Impact	Shallow Aquifer Impact	Surface Water Impact
Subalternative 1 Composite Plan	\$278 million	\$5.4 million gross -\$4.0 million net*	\$10.0 million	Drawup in the deep aquifer	Localized impact around community wells	3.4% reduction in groundwater derived baseflow
Subalternative 2 Composite Plan	\$326 million	\$8.0 million gross -\$8.7 million net*	\$8.4 million	Drawup in the deep aquifer	Localized impact around community wells	2.0% reduction in groundwater derived baseflow

*Includes a credit of \$9.4 million for reduced household water softening costs.

**Includes a credit of \$16.7 million for reduced water softening costs.

Environmental Justice Considerations

➤ What we have heard

- Communities which receive Lake Michigan water from the City of Milwaukee in accord with implementation of a regional water supply plan should in turn fully implement other elements of regional plans
 - Transportation (Public Transit)
 - Land Use
 - Housing