

ATTACHMENT 9

Program Preferences

The Dixon Main Drain / V-drain Enlargement Project addresses the following program preferences:

1. Effectively resolves significant water-related conflicts.
2. Contributes to the attainment of two CALFED Bay-Delta Program Objectives; water quality and ecosystem restoration.
3. Provides SWFM multiple benefits; flood control, water quality improvements, ecosystem benefits, and reduction of in-channel erosion.
4. Addresses the following priorities from Table 1 of Section II.F of the 2012 Guidelines: expand environmental stewardship, practice integrated flood management, and protect surface water quality.

The following paragraphs discuss how the Proposal assists in meeting the above-listed program preferences and documents the magnitude and breadth of Program Preferences that the Proposal will achieve.

PROGRAM PREFERENCES: RESOLVES SIGNIFICANT WATER-RELATED CONFLICTS, PRACTICE INTEGRATED FLOOD MANAGEMENT, AND FLOOD CONTROL

Drainage in the Dixon Watershed Management Plan area (northeastern Solano County) has been fraught with conflict and court cases due to increasing runoff from urban development and changing agricultural practices. The lack of cooperation and deficiency in planning became apparent as a result of the flooding from storms in 1996 and 1997. These events caused significant damages and road closures, including closure of Interstate 80.



Project Resolves Urban and Agricultural Drainage Conflicts.

As a result of this flooding, the Dixon Resource Conservation District, Reclamation District 2068, the Maine Prairie Water District, and the City of Dixon in cooperation with the Solano County Water Agency began a significant study of regional drainage needs with the goal of reducing flooding by reestablishing, at a minimum, the level of service originally constructed in the regional drainage facilities and increasing capacities where economically feasible and mutually beneficial to the parties. The projects were cooperatively developed to meet the needs of both the City and the different agricultural agencies.

The end result of this multiyear process, which included interested parties and analyzed multiple alternative alignments, was the Dixon Watershed Management Plan. The plan identified three major projects Pond A and Lateral 1 Improvement Project, Pond C Construction Project, and the Eastside Drainage Project. The Eastside Drainage Project includes two phases; The Dixon Main

ATTACHMENT 9

Program Preferences

Drain / V-drain Enlargement Project at the downstream end and the Eastside Drain. The three projects will significantly improve regional drainage and flood control while resolving the regional conflict between the member agencies which last sued each other in 1989. The Regional planning efforts and the implemented projects have addressed many of the outstanding conflicts. However, only the completion of the Dixon Main Drain / V-drain Enlargement Project and the Eastside Drainage project will completely resolve the current issues.

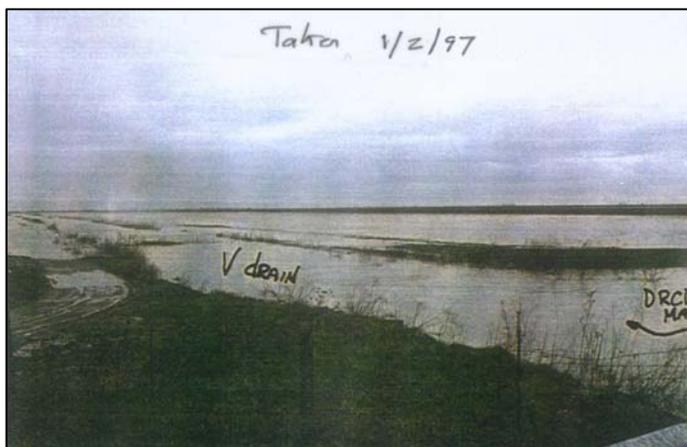
The Dixon Regional Watershed Joint Powers Authority (JPA) was formed in 2004 and its members are Dixon Resource Conservation District, Reclamation District 2068, the Maine Prairie Water District, and the City of Dixon. The JPA will own, construct, operate and maintain the regional drainage facilities.

The JPA and its member agencies have completed two of the three projects identified by the Dixon Regional Watershed Management Plan. The Pond A and Lateral 1 Improvement Project, a large detention basin with six miles of downstream channel improvements, was completed in 2005. The Pond C Construction Project, a large detention pond was constructed in 2007. The JPA completed additional planning and studies for the Eastside Drain Project and is currently seeking funding for the southern portion of the Eastside Drainage Project, the Dixon Main Drain / V-drain Enlargement Project (the proposed project).

The Pond A and Lateral 1 Improvement Project and the Pond C Construction projects provide new detention for urban storm runoff with increased channel capacity downstream of these ponds. Releases from the detention ponds are managed to detain and minimize urban runoff when agriculture drainage is at or exceeds the design storm event and then only releases urban storm water when capacity is available in the downstream channels. This integrated flood management method optimized the size of the urban stormwater detention ponds and the size of the downstream channels to reduce the depth and duration of flooding on agricultural lands. As indicated on Figure 9-1, the Benefit Map, these two completed projects have provided for and improved flood protection for 2,036 acres of existing and future urban development and reduced the depth and duration of flooding on 7,040 acres of agricultural lands.

EASTSIDE DRAINAGE PROJECT

The Eastside Drainage Project is a regional drainage project intended to provide an outfall for the Northeast Quadrant of Dixon and to reduce flooding of agricultural lands in Solano County south of the City of Dixon. The alignment of the Eastside Drainage Project is shown on Figure 9-2. The Eastside Drainage Project consists of two phases, the Eastside Drain and the Dixon Main Drain / V-drain Project. The City of Dixon's Northeast Quadrant and Basin D are tributary to the Eastside Drainage Project. A detention basin will provide storage and water quality treatment for runoff from the



Flooding from 1997 Storm.

ATTACHMENT 9

Program Preferences

Northeast Quadrant of Dixon and Basin D. The owners or developers of the Northeast Quadrant would fund, plan, design, acquire property, and construct this detention storage basin. The Northeast Quadrant is not a part of the Eastside Drainage Project.

The Eastside Drain is a system of new and enlarged channels constructed from the Northeast Quadrant to the Dixon Main Drain. The cost to construct the Eastside Drain will be completely funded with money from the Northeast Quadrant developers through Storm Drainage Facilities Impact Fees collected by the City of Dixon.

The Dixon Main Drain intersects the Eastside Drain at Swan Road near the abandoned railroad tracks. Dixon Main Drain / V-drain Project will enlarge the Main Drain channel to provide an increase of capacity from here to the V-Drain. The V-Drain will also be enlarged from this point to the RD 2068 Intake Canal near Haas Slough to provide additional capacity. This project enlarges the Dixon Main Drain/V-drain by an initial additional capacity of 375 cubic feet per second over its existing average capacity.

The Dixon Main Drain / V-drain enlargement project provides capacity now, to reduce the frequency depth and duration of flooding for local events caused by decades of urbanization and changes in agricultural practices. Furthermore, it completes the most environmentally complicated and costly component of the Eastside Drainage Project.

The Eastside Drainage Project will provide improved flood protection to 600 acres of existing and future urban development and reduced flooding for 11,600 acres of agricultural lands. The JPA continues to investigate future projects that will incorporate the benefits of the Eastside Drain Project to an additional 500 acres of existing and future urban development in the Solano County Northeast Dixon Agricultural Supporting Limited Industrial land uses and 4,800 acres of agricultural lands.

The combined benefits of the Dixon Watershed Management Plan projects when completed, will achieve improvements to 68% of the planning area (see Figure 9-2, Benefit Map). These improvements are:

- Stormwater flow reduction, stormwater flow management, and improved water quality for 3,136 acres of existing and future urban development;
- Reductions in the depth, frequency, and duration of flooding on 18,640 acres of agricultural lands;
- Manage storm inflows from 4,800 acres of agricultural lands.

There is a high degree of certainty that the program preferences of resolving water related conflict and practicing integrated flood management will be achieved. The agricultural agencies and the City of Dixon have come together to study flooding problems and construct improvements (Pond A and Lateral 1 and Pond C) in the watershed. There is a medium degree of certainty flood control can be provided in the entire Eastside Drainage Project since improvements in the upper watershed are dependent on future development; however, only the construction of the Main Drain/V-Drain Project will allow the possibility of reducing flooding in the upper watershed. There is a high degree of certainty that localized flooding in the Dixon Main Drain/V-Drain project area will be reduced by the project as shown in modeling results presented in Attachment 7. There is a high degree of certainty

ATTACHMENT 9

Program Preferences

that the Project will be constructed given the progress made in permitting and design as presented in Attachment 3.

PROGRAM PREFERENCES: WATER QUALITY, WATER QUALITY IMPROVEMENTS, REDUCTION OF IN-CHANNEL EROSION, AND PROTECT SURFACE WATER QUALITY

The Dixon Main Drain/V- Drain Enlargement Project is designed specifically to provide water quality benefits by reducing herbicide use, reducing instream erosion and eliminating livestock access to the channel.



The enlarged channel will have a high water flood bench and 4:1 side slopes that are planted with native species. A small low flow channel will be created which will be perennially flowing and suppress vegetation growth. With this channel configuration the JPA will be able employ a reduced weed management strategy. With the native vegetation established, mowing will be used to control the height of vegetation in the high flow channel. Only occasional spot treatment with herbicides will be used to control invasive plants and as needed to maintain channel capacity. Currently the channel bank section is sprayed with herbicide twice per year and it is anticipated future spraying will be limited to occasional spot treatments, after the native vegetation is established. The larger channel section with 4:1 slope banks and high water flood bench will decrease water velocity from the existing condition and thus decrease in-channel erosion. Model results show a decrease in average velocity when the channel is flowing at capacity. Vegetation on the bench and banks above the bench will also decrease channel erosion.

Fencing is one of the project components that will improve water quality.

The project will construct 8,600 feet of permanent fence along the western project boundary that will prevent livestock (cattle) from accessing the channel as is the case currently. Eliminating livestock's access to the water course will eliminate erosion and sedimentation caused by the livestock trampling and consuming vegetation. Furthermore, livestock will no longer be defecating in the waterway. The project will protect 24 acres of channel that is currently accessed by livestock.

There is a high degree of certainty these program preferences will be achieved. Channel construction, planting and fencing are all included in the proposed project. The project has received the majority of required permits and has an approved EIR and 95% complete design documents as discussed in Attachment 3.

PROGRAM PREFERENCES: ECOSYSTEM RESTORATION, ECOSYSTEM BENEFITS, AND EXPAND ENVIRONMENTAL STEWARDSHIP

The Dixon Main Drain/V-drain Enlargement Project will achieve the Program preference of ecosystem restoration, ecosystem benefits and expanding environmental stewardship by creating wetland and upland habitat.

ATTACHMENT 9 Program Preferences

The completed project will have approximately 18-19 acres of US Army Corps of Engineers regulated wetlands where there is approximate 13 acres of wetland now. The project includes five years of monitoring the created wetlands in order to ensure the establishment of a self-sustaining hydrophytic plant community that includes representative wetland taxa (i.e., wetland plant genera and species). The enlarged channels are designed to provide improved or superior habitat functions and values over the existing channels. Low flow channels will support perennially flowing water and floodplain benches and channel side slopes will remain saturated long enough during each wet season to promote sustainable growth of hydrophytic vegetation. Wetland areas will be monitored for five years after the completion of construction to verify their establishment.



Areas will be seeded with native grasses including blue wild rye.

In addition to the wetland area approximately 50 acres of uplands will be seeded with a variety of native perennial grasses. The upland area includes a portion of the channel slope above the floodplain bench, the upland edge and the piled spoils area. In areas adjacent to pasture, a cattle exclusion fence will be installed to protect the plantings.

Moisture-tolerant species such as creeping wildrye and meadow barley will be seeded near the waterline and on the primary floodplain bench. Drought-tolerant species such as purple needlegrass and blue wildrye will be added to the moisture-tolerant species and will be seeded on the upper slopes and dry land areas. Species mixes will overlap in the transition zones. The following seed mixes will be used.

Drought-tolerant Upland Native Grass Seed Mix	
Purple needlegrass	<i>Nassella pulchra</i>
Blue wildrye	<i>Elymus glaucus</i>
Slender wheatgrass	<i>Elymus trachycaulus</i>
Creeping wildrye	<i>Leymus triticoides</i>

Flood Tolerant Native Grass Seed Mix	
Creeping wildrye	<i>Leymus triticoides</i>
Blue wildrye	<i>Elymus glaucus</i>
Slender wheatgrass	<i>Elymus trachycaulus</i>
Meadow barley	<i>Hordeum brachyantherum</i>

ATTACHMENT 9

Program Preferences

Seed will be mixed in chosen proportions and drill seeded at the site with a Truax, or equivalent, seed drill at a rate of 15-21 pounds to the acre depending on the final seed mix. The goal from the mix will be to have between 50 and 80 seeds per square foot. Seeded areas will be sprayed before planting or with a low-dose of herbicide approximately 10 days after seeding (before the native grasses have germinated) to kill early-germinating weeds. Rice straw will be applied on erosive areas at a rate of approximately 25 bales/acre. The seeding will be monitored and maintained for two years by mowing, spot spraying, applying Transline or other broadleaf herbicides and only, if necessary, hoeing, and weed whacking. Within two years, there will be 50% visual coverage by native grasses of the area seeded. Upland area monitoring will include the following:

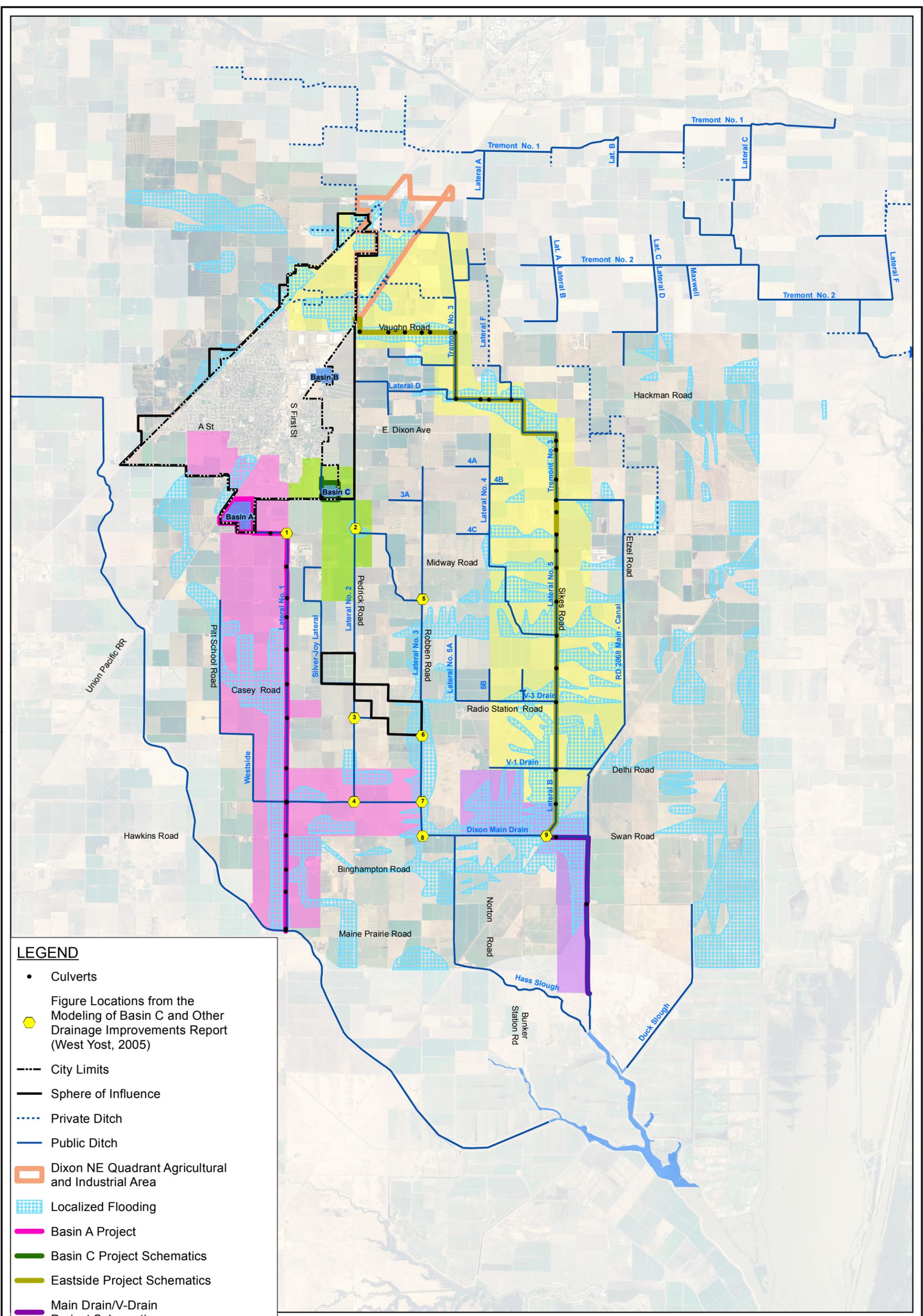
1. Photo point establishment and photo monitoring annually to document plant survival and growth through the end of the Agreement.
2. Quarterly surveying of planted vegetation to determine survival.
3. Semi-annual (spring and fall) surveys to determine need for weed control.

There is a high degree of certainty these program preferences will be achieved. Monitoring programs will be performed for planting and wetland establishment. Monitoring programs for wet lands are included in Attachment 3, Appendix A.

List of Figures:

Figure 9-1. Benefit Map

Figure 9-2. Eastside Drainage Project



LEGEND

- Culverts
- Figure Locations from the Modeling of Basin C and Other Drainage Improvements Report (West Yost, 2005)
- City Limits
- Sphere of Influence
- Private Ditch
- Public Ditch
- ▭ Dixon NE Quadrant Agricultural and Industrial Area
- ▨ Localized Flooding
- ▭ Basin A Project
- ▭ Basin C Project Schematics
- ▭ Eastside Project Schematics
- ▭ Main Drain/V-Drain Project Schematics
- ▭ Basin A / Lateral 1 Benefit
- ▭ Basin C / Lateral 2 Benefit
- ▭ Eastside Drainage Project Benefit Area
- ▭ Main Drain/V-Drain Benefit

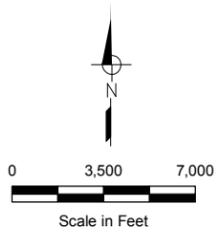
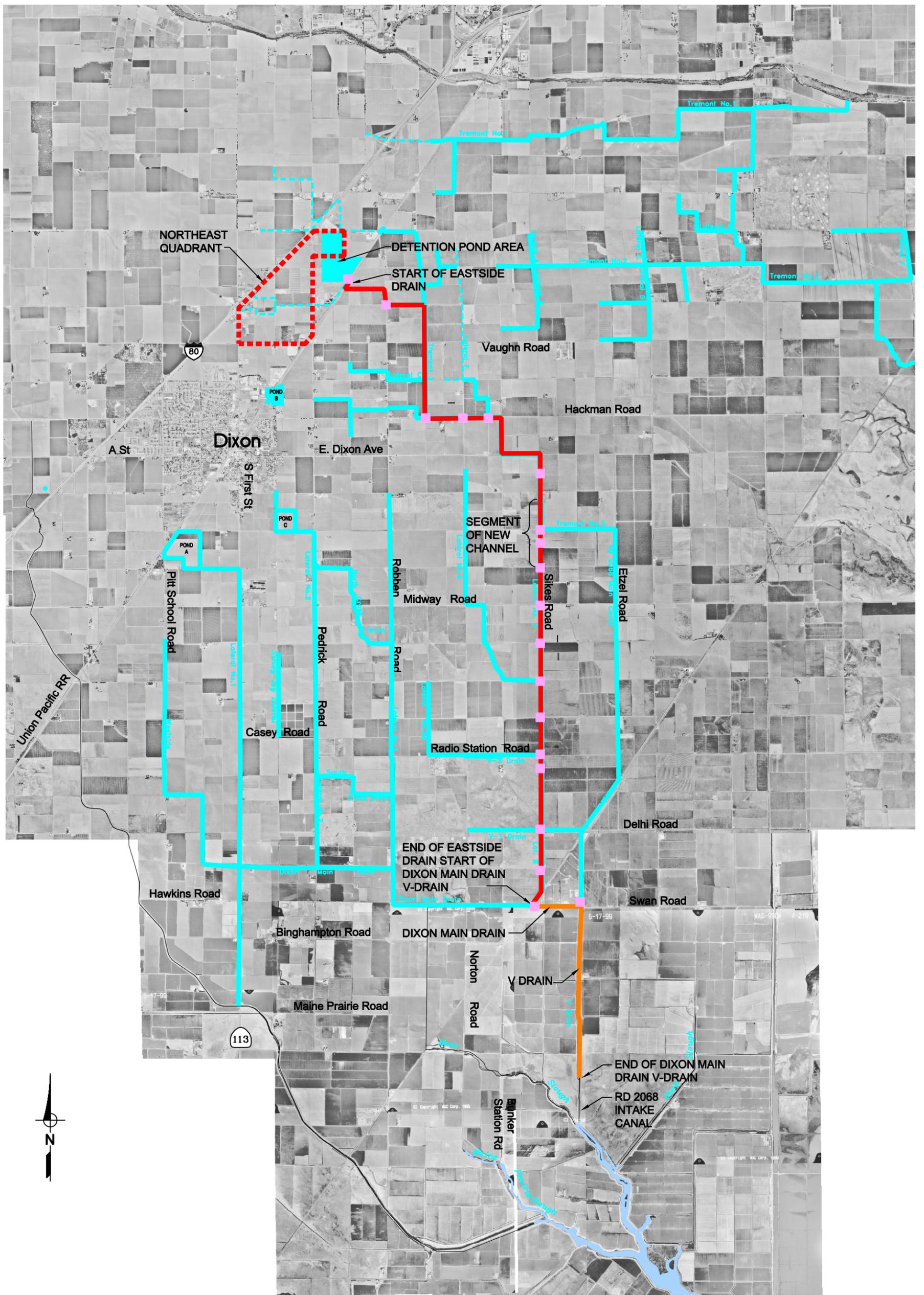


FIGURE 9-1

Dixon Regional Watershed JPA Proposition 1E Grant Proposal

BENEFIT MAP





LEGEND:

- DRAINAGE CHANNEL MAINTAINED BY DISTRICT
- - - - - DRAINAGE CHANNEL NOT MAINTAINED BY DISTRICT
- EASTSIDE DRAIN
- DIXON MAIN DRAIN V-DRAIN
- EASTSIDE DRAIN CULVERT(S)

Figure 9-2

Dixon Regional Watershed JPA
 Proposition 1E Grant Proposal
 Eastside Drainage Project

