



PUBLIC FINANCE  
& MANAGEMENT  
**RESOLVED**

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# Reclamation District 2035

## **Operations and Maintenance Assessment**

*ADMINISTRATIVE DRAFT  
ENGINEER'S REPORT*

Prepared for: Reclamation District 2035  
Submission Date: April 5, 2018

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# 1. Introduction

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## Background

Reclamation District 2035 (RD 2035) is responsible for operating and maintaining 12.1 miles of levees that span the eastern edge of Yolo County within the Yolo Bypass area. It is also responsible for operating and maintaining the internal drainage system (canals, ditches and pump stations) that collects and removes rain and storm waters to prevent flooding.

Since its formation, RD 2035 has levied a property assessment under the Reclamation District Act to pay for operation and maintenance of both the levees and the internal drainage system. RD 2035's assessment rates have not been increased since 1998. However, in the past 20 years, the cost to operate and maintain the levees and internal drainage system have increased due to the rise in labor and material costs, and additional compliance requirements.

RD 2035 is proposing to levy a new assessment under the Benefit Assessment Act of 1982 for maintenance and operation of its levees and internal drainage to adequately fund the activities and minimize the need for debt financing. If approved by property owners, the new assessment described herein would replace the existing assessment under the Reclamation District Act.

## Purpose of Engineer's Report

This Engineer's Report describes, in detail, the methodology for levying an assessment upon parcels that receive special benefit from the levee and internal drainage operations and maintenance services provided by RD 2035. The assessment is intended to provide RD 2035 with sufficient funding to support the appropriate level of levee deficiency improvements required to maintain eligibility under Public Law 84-99.

## Report Organization

This report is divided into six sections. **Section 1** provides the background and purpose; **Section 2** of this report outlines the authorization and process for imposing the proposed assessment; **Section 3** describes the funding plan for levee and drainage services; **Section 4** details the methodology for levying an assessment that is proportional to the special benefits received by each parcel being assessed; **Section 5** describes how the assessment would be administered on an annual basis; and **Section 6** provides the special benefit findings and certification by the Assessment Engineer.

**Appendix A** provides the proposed assessment roll.

## 2. Authority and Process

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The proposed Operations and Maintenance Assessment (Assessment) would be imposed by RD 2035 pursuant to the Benefit Assessment Act of 1982 (1982 Act) codified in California Government Code §§ 54703 - 54719. Under Government Code §54710 (a), RD 2035 is authorized to levy an assessment to finance the maintenance and operation costs for flood control and drainage services. Furthermore under §54710.5, the assessment may include the cost of installation and improvement of the facilities providing these services. As further detailed in **Section 3**, the Assessment will fund the annual cost of operations and maintenance and allows for a limited amount of debt service to accomplish levee deficiency repairs.

Under Government Code §54711, the assessment must meet the following requirements:

1. The amount of the assessment imposed on any parcel must be related to the benefit received by the parcel;
2. The aggregate amount of the assessment cannot exceed the annual cost of providing the service; and
3. The revenue derived from the assessment must only be used for the services identified as the basis for assessment.

In addition, all special benefit assessments must also comply with Article XIID of the State Constitution, commonly referred to as Proposition 218, and the Proposition 218 Omnibus Implementation Act (Government Code §53750 et seq.). These requirements outline the process for imposing the Assessment, including the requirement that this Engineer's Report documents the special benefits conferred by the services provided, the process for imposing the Assessment, and property owner approval through a balloting process.

This Engineer's Report has been prepared to:

1. Contain the information required pursuant to Government Code §54716 (a), including;
  - a. a description of the services proposed to be financed through the revenue derived from the Assessment;
  - b. a description of each lot or parcel of property to be subject to the Assessment;
  - c. the amount of the proposed Assessment for each lot or parcel;
  - d. the basis of the Assessment; and,
  - e. the schedule of the Assessment;
2. Determine the special benefits received from the services provided by RD 2035 to benefiting properties; and,
3. Assign a method of apportioning the Assessment to benefiting properties.

Following submittal of this report to the RD 2035 Board of Trustees (Board) for preliminary approval, the Board may, by resolution, call for an assessment ballot proceeding and public hearing on the establishment of the proposed Assessment.

If the Board approves such a resolution, the secretary of the Board will initiate the notice, protest, and hearing procedure required by Government Code §54716 and Article XIID. A notice and assessment ballot will be mailed to property owners within the RD 2035 boundaries. Such notice would include a description of the services to be funded by the Assessment,

the proposed amount to be assessed upon each parcel owned, the duration of the Assessment, an explanation of the method of voting on the Assessment, and the name and telephone number of the person designated by the Board to answer inquiries regarding the protest hearing. Each notice would also specify the date, time, and place of the public hearing and a summary of the ballot return procedures. Finally, each notice would include a ballot upon which the property owner can mark his or her approval or disapproval of the proposed Assessment, as well as affix his or her signature, and a postage prepaid envelope in which to return the ballot.

Property owners will have at least 45 days to return the assessment ballots. On the last day of the balloting period, the public hearing will be held for the purpose of receiving public testimony regarding the proposed Assessment. At the public hearing, property owners will have the opportunity to address the Board about the proposed Assessment. Ballots must be submitted prior to the close of the public hearing. Property owners may also revise previously submitted ballots prior to the close of the public hearing.

If the votes received in favor of the proposed Assessment outweigh the votes received opposing the proposed Assessment (weighted by the proportional financial obligation of the property for which the ballots are submitted), the Board may continue with the process of imposing the proposed Assessment and its future levy. If the assessments are so confirmed and approved by the Board, the Assessment roll would be submitted in future years to the County Auditor Controller for inclusion on the secured property tax rolls, or RD 2035 may directly bill the property owner for the Assessment pursuant to Government Code §54718. As outlined in Government Code §53739, the Board may levy the Assessment in future years without conducting a new ballot proceeding so long as the Assessment is within the stated inflation-adjusted Assessment Rate authorized by the original balloting proceeding.

### 3. Proposed Services and Funding Plan

#### Services Funded by the Assessment

The services to be funded by the proposed Assessment include all activities associated with levee operation and maintenance, improvements on levee deficiencies, and the collection, conveyance, and discharge of drainage water within the boundary of RD 2035. These services include levee construction, ongoing maintenance of the levees, drainage canal maintenance, and pump station operations and maintenance. In addition to the on-going performance of these services, the proposed assessment will also provide adequate reserves to support long-term repair, rehabilitation, and replacement of the District's levee and drainage facilities in order to ensure an adequate level of service over the duration of the Assessment. Collectively, these services are herein referred to as "O&M Services."

#### Annual Budget for Drainage Services Provided by RD 2035

The annual revenue and expenses for O&M Services provided by RD 2035 were reviewed and updated with input from RD 2035 staff and the District Engineer. **Table 1** summarizes RD 2035's annual budget required beginning Fiscal Year 2018/19. Future year's expenses and required revenue for O&M Services are expected increase in subsequent years, as discussed in **Section 5** under "Escalation of the Assessment".

It should be noted that the budget for O&M Services shown within this Engineer's Report was developed for the purpose of determining the annual revenue required for this proposed Assessment. Future budgets for O&M Services approved by the RD 2035 Board of Trustees may vary from year to year according to actual anticipated expenses and revenues. In addition, although the budget was developed with a *pay-as-you-go* approach, the RD 2035 Board of Trustees may elect to finance certain activities. Therefore, an annual allowance for debt service has been included in the budget.

**Table 1 – Proposed Budget for FY 2016/17**

Services	Annual Budget
Drainage Operations & Maintenance	\$150,000
Levee Operations and Maintenance	\$250,000
Subtotal Operations & Maintenance	\$400,000
Debt Service (\$400K; 10 Years @ 4%)	\$50,000
Contingency (10.0%)	\$45,000
<b>Total Annual Budget</b>	<b>\$495,000</b>

## 4. Assessment Methodology

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### General Discussion

#### ***Requirements of Proposition 218***

To levy an assessment for a property related service such as drainage, Proposition 218 requires the local agency to:

- Separate the general benefits from the special benefits conferred on a parcel;
- Identify the parcels that have special benefits conferred on them by the facility and/or service;
- Calculate the proportionate special benefit for each parcel in relation to the entirety of the Capital and O&M expenses being funded; and
- Ensure the assessment does not exceed the reasonable cost of the proportionate special benefit conferred on each parcel.

#### ***Special Benefits vs. General Benefits***

Proposition 218 requires any local agency proposing to increase or impose a special assessment to “separate the general benefits from the special benefits conferred on a parcel.” (Cal. Const. art. XIIIID §4). The rationale for separating special and general benefits is to ensure that property owners are not charged a special benefit assessment in order to pay for general benefits provided to the general public or to property outside the assessment district. Thus, a local agency carrying out a project that provides both special and general benefits may levy an assessment to pay for the special benefits, but must acquire separate funding to pay for the general benefits.<sup>1</sup>

A special benefit is a particular and distinct benefit over and above the general benefits conferred on real property located in the district or to the public at large. The total cost of the services must be apportioned among the properties being assessed based on the proportionate special benefit the properties will receive. Moreover, the governmental agency must demonstrate through a balloting process that the ballots submitted in opposition to the assessment do not exceed the ballots submitted in favor of the assessment, weighted according to the proportional special benefit and financial obligation of the affected properties.

In this instance, the O&M services of RD 2035 provide a special benefit only to a distinct set of properties. Specifically, all parcels within RD 2035 boundaries that are located south of the Yolo Rail Line receive a special benefit from the drainage O&M Services provided by RD 2035. RD 2035 provides this service through the operation and maintenance of a system of drainage canals and pump stations that collects runoff from properties within the district and discharges excess drainage into the Yolo Bypass. The removal of surface water prevents flooding and ponding of water that would otherwise damage or limit the usefulness of the properties located within the district. The special benefit received by each property for the drainage O&M services varies based on parcel size and parcel use, which were used to determine the relative contribution of drainage water to RD 2035 drainage system.

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<sup>1</sup> *Silicon Valley Taxpayers' Assn., Inc. v. Santa Clara County Open Space Authority*, 44 Cal. 4th 431, 450; 2008

Likewise, a distinct set of properties benefit from levee O&M services provided by RD 2035. These properties are located within the area protected by the west levee of the Yolo By-Pass that is maintained by the District. These properties were identified by the delineation of a floodplain that resulted from a levee break analysis performed by the District Engineer. The special benefit received by each property for the levee O&M services varies based on parcel size, parcel use, average flood depth and associated structure and crop damage resulting from the levee break analysis. A portion the special benefit area lies outside the RD 2035 boundary. While properties within the special benefit area outside the RD 2035 boundary were apportioned their share of the special benefit, the District cannot assess these properties.

In addition to real property, utility easements exist within the District that also receive a special benefit from the O&M services. The special benefit received by the utility easements include avoided flood damages to infrastructure and uninterrupted access throughout the easement to facilitate each utility's independent maintenance activities.

### ***Proposed Assessment Boundary***

All parcels within RD 2035 boundaries receive special benefit from the O&M Services provided by the District. are within the benefit area of the proposed assessment. As noted above, certain properties outside the district receive special benefit from O&M Services. While these properties are apportioned benefit, they are not included in the proposed assessment boundary. The assessment boundary is the RD 2035 boundary, as shown in **Figure 1**.

### **Assessment Apportionment Methodology**

The methodology for apportioning the annual assessment is based on calculating the total number of equivalent benefit units for each parcel or utility easement based on the special benefit that results from the O&M Services.

### ***Special Benefit Categories***

The first step in apportioning special benefit is to identify the special benefit categories to be provided by the O&M Services and establish the relative weighted benefit appropriate for each special benefit category. The following special benefit categories are provided under the proposed assessment.

1. **Drainage Benefit.** The District maintains drainage canals and a pump station to collect and discharge rainfall and agricultural tailwater runoff south of the Yolo Rail Line adjacent to County Road 22. This service provides a benefit to properties south of the Yolo Rail Line by preventing nuisance flooding and maintaining the usefulness of the property. Based on the level of effort and associated cost expended by the District to maintain adequate drainage, the relative weight for the Drainage Benefit has been determined to be 40% of the total special benefit.
2. **Flood Damage Reduction Benefit.** The District maintains the reach of the west levee of the Yolo By-Pass from the Yolo Rail Line to Interstate 80. These activities reduce the risk for flood damage to properties protected by the levee. Based on level of effort and associated costs expended by the District for levee O&M Services, it has been determined that the relative weight for the flood damage reduction benefit is 50%. The Flood Damage Reduction Benefit is further divided into Crop Damage Reduction and Structure Damage Reduction based on an evaluation of the total crop value within the benefit area compared to the value of structures located within the benefit area. The potential flood damage to crops was determined to be 90% of the total damages to both crops and structures due to the limited number of structures within the benefit area. Therefore, the relative weight for Crop Damage is 45% of the total special benefit, and the relative weight for Structure Damage Reduction is 5% of the total special benefit.
3. **Utility Easement Benefit.** The District's O&M Services provide uninterrupted access to the easement to facilitate the Utility's maintenance activities and prevents damage to utility infrastructure. Based on the relative special benefit received by the Utilities as compared to real property owners, it has been determined that the relative weight for the utility easement benefit is 10% of the total special benefit.



### **Property Characteristics**

In order to quantify the special benefit received by each parcel, the apportionment methodology utilizes the following property characteristics:

1. The land use category assigned to each parcel;
2. The size (acreage) of each parcel; and
3. The size (square-footage) of buildings on each parcel.

### **Land Use Categories**

Land use categories are used identify parcels with similar attributes for the purpose of assigning factors and values for determining relative benefit. There are multiple land use codes used by the Yolo County Assessor to categorize the properties within RD 2035. Each land use code was evaluated and assigned to a generalized land use category (e.g.: agricultural, residential, commercial, industrial). Additional land use categories were added to classify parcels that were vacant, open space, or otherwise dissimilar from the generalized land use categories.

### **Parcel Size**

Parcel acreage was obtained from Yolo County Assessor's data acquired through ParcelQuest. The data from ParcelQuest was compared to raw GIS parcel data downloaded from the Yolo County GIS Parcel Viewer for validation. Parcels located along the boundary of the District were reviewed and the acreage adjusted to eliminate the portion beneath a levee footprint.

### **Building Size**

Building square-footage was also obtained from the Yolo County Assessor's date. Each building located within floodplain resulting from the levee breach analysis was verified on aerial imagery to confirm the size of building footprint and that the type of building matched the parcel land use.

**Table 2** summarizes the catalog of land use categories with the total number of parcels within the benefit area and associated acreage and structural square feet of parcels associated with each land use category. Note that the benefit area extends beyond the District boundaries.

**Table 2 - Summary of Parcel Count, Acres, and Building Square Feet by Land Use Category**

Land Use Cat	No. of Parcels	Acres	Structure SQFT
Residential	0	0	0
Commercial	6	61	211,690
Industrial	18	868	4,891,333
Agricultural	86	22,685	101,403
Vacant	11	956	0
Utility Easement	2	190	0
Gas Easement	28	0	14,000
Flood	18	337	0
<b>Total</b>	<b>169</b>	<b>25,096</b>	<b>5,218,426</b>

***Drainage Benefit***

The District maintains drainage canals and a pump station to collect and discharge rainfall and agricultural tailwater runoff south of the Yolo Rail Line adjacent to County Road 22. This service provides a benefit to properties south of the Yolo Rail Line by preventing nuisance flooding and maintaining the usefulness of the property. The Drainage Benefit is apportioned to properties based on the relative quantity of runoff from each property and the drainage facilities required to convey the runoff out of the District. The Drainage Benefit is determined by using the following formulae:

$$\text{Relative Drainage Benefit} = (\text{Relative Runoff Factor}) \times (\text{Drainage Factor}) \times (\text{Parcel Acreage})$$

$$\text{Drainage Benefit Units} = 40\% \times (\text{Relative Drainage Benefit}) \div (\text{Sum of the Relative Drainage Benefit for all Parcels})$$

**Relative Runoff Factor**

To properly apportion benefit based on the relative quantity of runoff from each property, each land use category was assigned a relative runoff coefficient to compare the quantity of runoff per acre between land use categories. The runoff coefficient is a function of the percent impervious cover over the entire parcel and natural attenuation that occurs due to the land use. Therefore, land use categories with higher relative runoff coefficients (e.g.: Industrial) receive a relatively greater benefit because a greater quantity of runoff is generated per acre than those with lower relative runoff coefficients (e.g.: Agricultural).

**Table 3** summarizes the relative runoff coefficient assigned to each Land Use Category.

**Table 3 – Runoff coefficients by Land Use Category**

Land Use Category	Runoff Coefficient
Residential	0.6
Commercial	0.9
Industrial	0.9
Agricultural	0.3
Vacant	0.5
Utility Easement	0
Gas Easement	0
Flood/Drainage Works	0

**Drainage Factors**

The special benefit received by each parcel is dependent on the services required to capture and convey the runoff from the parcel. The following drainage categories were developed to characterize the required drainage services and assign a relative drainage factor.

- Gravity Drained. This category is assigned to parcels that do not require District pumping. Parcels within this drainage category are located east of the levee in the Yolo By-pass.
- Pumping Required. This category is assigned to parcels for which runoff from the parcel is conveyed to one of the District's pumping plants and pumped out of the District into the Yolo Bypass. Parcels within this drainage category lie west of the Yolo By-pass levee.

**Table 4** summarizes the drainage categories and applicable drainage factors.

**Table 4 – Drainage Categories and Drainage Factors**

Special Benefit Category	Special Benefit Description	Drainage Factor
Gravity Drained	Parcels drain to RD 2035 canals and conveyed by gravity outside of the District without pumping.	1
Required Pumping	Parcels drain to RD 2035 canals and conveyed to RD 2035 pump stations for discharge out of the District.	2

**Flood Damage Reduction Benefit**

In order to determine the special benefit received from the District's levee O&M services, the District's Engineer performed a levee breach analysis to determine the extent and depth of flooding that could occur. The flooding that could occur based on the analysis is shown in Figure 2. As part of this analysis, the District Engineer supplied a database of parcels with the associated average depth of flooding.

**Crop Damage Reduction Benefit**

The District maintains the reach of the Yolo By-Pass West Levee from the Yolo Rail Line to Interstate 80. These activities reduce the risk for flood damage to crops growing on properties protected by the levee. The Crop Damage Reduction Benefit is apportioned to properties within the levee benefit area based on the relative amount of avoided crop loss. The Crop Damage Reduction Benefit is determined by using the following formulae:

$$\text{Relative Crop Damage} = (\text{Crop Damage Factor}) \times (\text{Parcel Acres})$$

$$\text{Crop Benefit Units} = 45\% \times (\text{Relative Crop Damage}) \div (\text{Total Relative Crop Damage from all Properties})$$

**Crop Value**

The predominant crop grown within the benefit area protected by the levee is rice. The baseline level of crop damage for Rice was set at \$350 per acre based on data provided in Table 3-15 of the 2012 Central Valley Flood Protection Plan, Attachment 8F: Flood Damage Analysis.

**Crop Damage Factor**

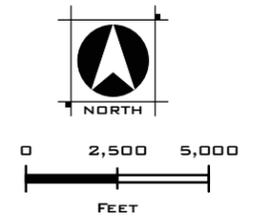
For the purpose of apportioning benefit, the baseline level of crop damage was applied to properties with a depth of flooding greater than or equal to 1 foot. The crop damage was reduced by half for properties with a depth of flooding greater than or equal to ½ foot but less than 1 foot. No crop damage was assigned to properties with a flood depth less than ½ foot.

**Table 5** summarizes the Crop Damage Factors applied to agricultural properties west of Yolo By-pass levee.

**Table 5 Crop Damage Factors**

Flood Depth (ft)	Baseline Crop Damage Value	% Crop Damage	Crop Damage Factor
< 0.5		0%	\$0
0.5 - 1.0	\$350	50%	\$175
> 1.0		100%	\$350

YOLO BYPASS LEVEE BREACHES 1 AND 2  
 COMPOSITE 200-YEAR  
 FLOODPLAIN EXTENTS MAP  
 CONAWAY LEVEE SETBACK AND  
 TRANSITORY STORAGE PROJECT  
 YOLO COUNTY, CA  
 NOVEMBER, 2016



**Legend**

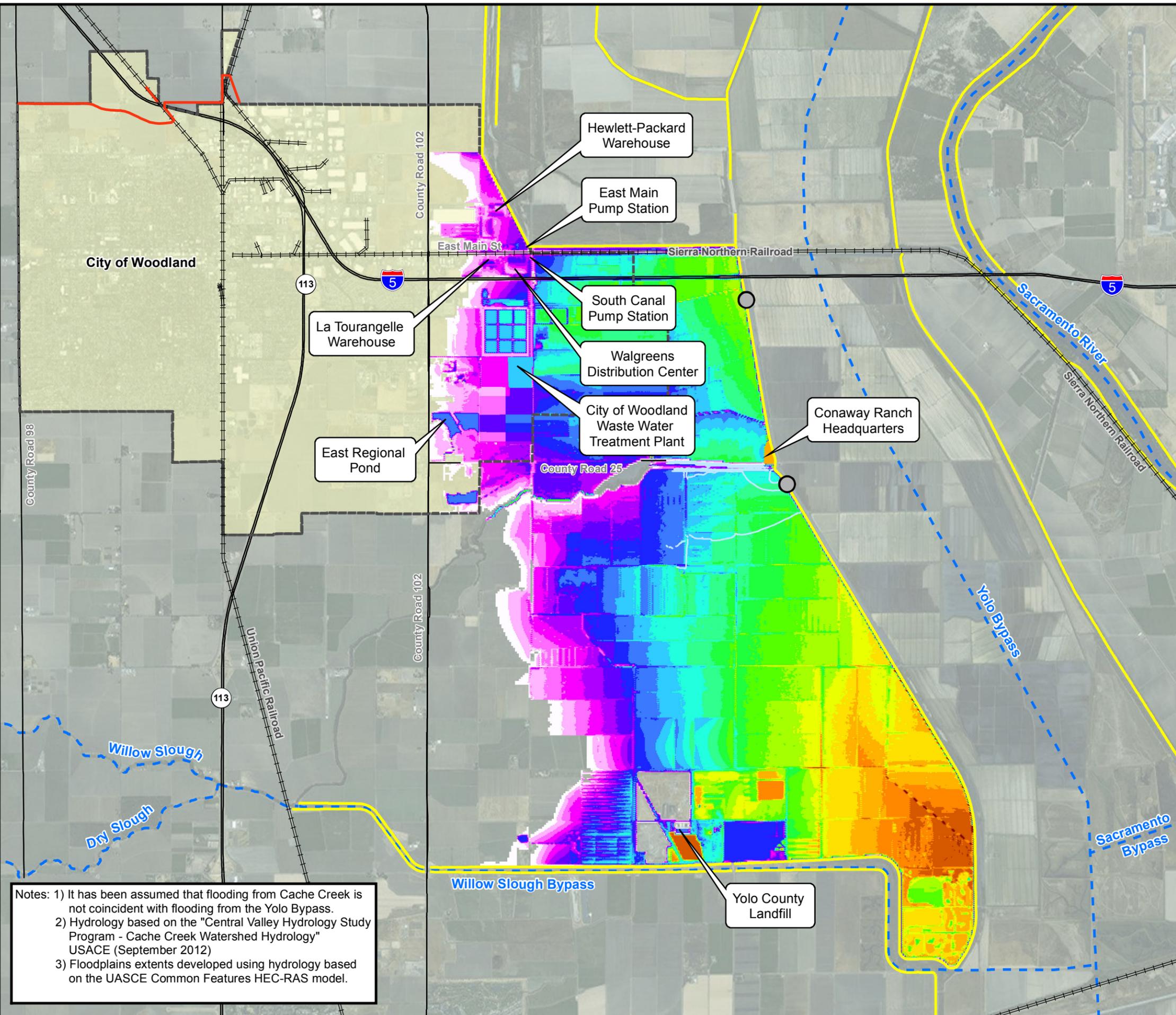
- Breach Location
- City of Woodland
- Conaway Ranch Headquarters
- Proposed Embankments
- State Plan of Flood Control Levees
- Stream Centerlines
- Preliminary 200-Year WSEL Contours (ft, NAVD 88)
- Existing Railways
- Highways

**200-Year Floodplain Depth (ft):**

> 0.0 - 1.0	> 7.0 - 8.0	> 14.0 - 15.0
> 1.0 - 2.0	> 8.0 - 9.0	> 15.0 - 16.0
> 2.0 - 3.0	> 9.0 - 10.0	> 16.0 - 17.0
> 3.0 - 4.0	> 10.0 - 11.0	> 17.0 - 18.0
> 4.0 - 5.0	> 11.0 - 12.0	> 18.0 - 19.0
> 5.0 - 6.0	> 12.0 - 13.0	> 19.0 - 20.0
> 6.0 - 7.0	> 13.0 - 14.0	> 20.0

Basemap source: Esri Online Services

**PRELIMINARY**



Notes: 1) It has been assumed that flooding from Cache Creek is not coincident with flooding from the Yolo Bypass.  
 2) Hydrology based on the "Central Valley Hydrology Study Program - Cache Creek Watershed Hydrology" USACE (September 2012)  
 3) Floodplains extents developed using hydrology based on the UASCE Common Features HEC-RAS model.

### **Structure Damage Reduction Benefit**

Several structures are located within the benefit protected by the levee, including commercial and warehouse buildings between Interstate 5 and East Main Street, buildings at the Davis wastewater treatment plant and Yolo County landfill. The Structure Damage Reduction Benefit is apportioned to properties within the levee benefit area based on the relative amount of avoided damages to buildings using the following formulae:

$$\text{Percent Structure Damage} = f(\text{Type of Structure, Foundation Height, Average Flood Depth})$$

$$\text{Relative Structure Damage} = (\text{Percent Structure Damage}) \times (\text{Relative Structure Value}) \times (\text{Structure Size})$$

$$\text{Structure Benefit Units} = 5\% \times (\text{Relative Structure Damage}) \div (\text{Total Relative Structure Damage from all Properties})$$

### **Percent Structure Damage**

Depth-Damage curves developed by the US Army Corp of Engineers were utilized to determine the percentage of damages to structures in the levee benefit area. The depth used to develop the curves is relative to the finish floor elevation. With the average flood depth is relative to the existing ground, an estimation of the foundation height was made to correlate the flood depth to the finish floor elevation. **Table 6** summarizes the assumed foundation height by land use category. Utilizing the flood depth in relation to the finish floor elevation, the depth-damage functions provided in **Table 7** were used to determine the Percent Structure Damage.

**Table 6 – Assumed Foundation Heights**

Structure Type	Assumed Foundation Height (feet)
Commercial	1.00
Government	1.00
Industrial	1.00
Single-Family	1.00
Gas Well	0.25
Vacant	0.00

**Table 7 – Depth-Damage Functions**

Depth from Finish Floor (Feet)	Structure Damage as Percentage of Relative Structure Value			
	Residential	Commercial	Industrial	Gas Well
-2	0%	0%	0%	0%
-1	5%	0%	0%	0%
0	22%	18%	7%	0%
1	37%	34%	36%	30%
2	50%	48%	58%	30%
3	62%	57%	73%	30%
4	73%	65%	88%	30%
5	82%	71%	100%	30%
6	90%	85%	124%	30%
7	97%	93%	140%	30%
8	103%	98%	143%	30%
9	108%	105%	145%	30%
10	112%	106%	146%	30%
11	115%	107%	147%	30%
12	117%	107%	147%	30%
13	119%	109%	149%	30%
14	120%	110%	150%	30%
15	120%	110%	150%	30%

**Relative Structure Value**

Structures located within the levee benefit area were assigned a structure type consistent with its land use category. Each structure type was assigned a Relative Structure Value based on the Marshall & Swift Valuation Tables included in the 2012 Central Valley Flood Protection Plant, Attachment 8F: Flood Damage Analysis. **Table 8** summarizes the Relative Structure Value assigned to each structure type.

**Table 8 – Relative Structure Value**

Structure Type	Relative Structure Value per Sq.Ft.
Commercial	\$70
Government	\$70
Industrial	\$50
Mobile Home	\$55
Multifamily	\$60
Single-Family	\$60
Gas Well (Active / Idle)	\$10,000

**Utility Easement Benefit**

Utility facilities located west of the Yolo By-Pass levee receive a special benefit from uninterrupted access to the easement to facilitate the Utility's maintenance activities and prevents damage to utility infrastructure. While accessible facilities may only be located at specific intervals along the easement, for the purpose of apportioning, the benefit is spread across the entire area of the easement. The Utility Easement Benefit is apportioned using the following formulae:

$$\text{Relative Utility Benefit} = \text{Utility Factor} * \text{Easement Size}$$

$$\text{Utility Easement Benefit Units} = 10\% \times (\text{Relative Utility Benefit}) \div (\text{Total Relative Utility Benefit for all Utilities})$$

**Utility Factor**

Overhead and Underground receive a different level of benefit due to submergence of the underground utilities. Underground utilities are typically installed deep below the surface with very limited at grade facilities that require access for maintenance. Therefore, underground utilities receive one-half of the benefit as compared to overhead utilities. While no underground utility easements currently exist, this methodology is inclusive of underground utilities in the event an underground utility easement is acquired in the future. **Table 9** summarizes the Utility Factors applied to overhead and underground utility easements.

**Table 9 – Utility Factors**

Utility Type	Utility Factor
Underground	0.50
Overhead	1.00

### Special Benefit Assessment Calculation

RD 2035 analyzed the cost to provide Drainage O&M and Levee O&M and determined the annual revenue required to continue to provide the Drainage Services is \$495,000. This amount includes administration of the Assessment and contingency. The budget is provided in **Table 1**.

To determine the proposed assessment for an individual parcel, the amount of Special Benefit Units (BU) for the parcel is the sum of any individual parcel's BU from drainage benefit, crop damage reduction benefit, structure damage reduction benefit, and utility easement benefit. The proposed assessment rate per BU is equal to the required annual cost divided by the total quantity of BU's within the entire District. All factors to calculate the BU can be found in the provided tables. The total relative benefit units for each special benefit category are presented in **Table 10**.

The Benefit Units proposed assessment for an individual parcel can be expressed by the following formulae:

$$[Drainage\ BU]_{Parcel} = [40\ BU] * \left[ \begin{array}{c} Runoff \\ Coefficient \\ (Table\ 3) \end{array} \right] * \left[ \begin{array}{c} Drainage \\ Factor \\ (Table\ 4) \end{array} \right] * [Parcel\ Acreage] \div \sum_{Total} [Relative\ Drainage\ BU]$$

$$\left[ \begin{array}{c} Crop\ Damage \\ Reduction\ BU \end{array} \right]_{Parcel} = [45\ BU] * \left[ \begin{array}{c} Crop \\ Damage \\ (Table\ 5) \end{array} \right] \div \sum_{Total} \left[ \begin{array}{c} Relative \\ Crop\ Damage \\ Reduction\ BU \end{array} \right]$$

$$\left[ \begin{array}{c} Structure\ Damage \\ Reduction\ BU \end{array} \right]_{Parcel} = [5\ BU] * \left[ \begin{array}{c} Damage \\ Reduction \\ Percentage \\ (Table\ 7) \end{array} \right] * \left[ \begin{array}{c} Relative \\ Structure \\ Value \\ (Table\ 8) \end{array} \right] * [Structure\ Size] \div \sum_{Total} \left[ \begin{array}{c} Relative \\ Structure\ Damage \\ Reduction\ BU \end{array} \right]$$

$$\left[ \begin{array}{c} Utility \\ Easement\ BU \end{array} \right]_{Easement} = 10\% * \left[ \begin{array}{c} Utility\ Factor \\ (Table\ 9) \end{array} \right] * [Easement\ Size] \div \sum_{Total} [Relative\ Utility\ Easement\ BU]$$

$$[Total\ BU]_{Parcel} = [Drainage\ BU]_{Parcel} + \left[ \begin{array}{c} Crop\ Damage \\ Reduction\ BU \end{array} \right]_{Parcel} + \left[ \begin{array}{c} Structure\ Damage \\ Reduction\ BU \end{array} \right]_{Parcel} + \left[ \begin{array}{c} Utility \\ Easement\ BU \end{array} \right]_{Easement}$$

**Table 10 Total Benefit Units by Special Benefit Category**

Special Benefit Category	Relative Benefit Units	Special Benefit Units
Drainage	9,000	40
Crop Damage Reduction	4,066,006	45
Structure Damage Reduction	124,425,214	5
Utility Easement	190	10

The Assessment Rate required to collect the required annual revenue is **\$4,950** per SBU with a minimum assessment of \$25 per parcel, consistent with CA Water Code §51335.5.

***Example Assessment Calculations***

Using the property data and the assessment factors described above that are associated with the property, an individual parcel's assessment for either a current land use or potential future land use can be calculated using the following steps.

- Step 1: Locate the property and determine whether it is within the District boundary, receives drainage service and is protect by the Yolo By-pass West Levee.
- Step 2: Obtain Land Use Category, parcel size, building type and area, and flood depth for the property.
- Step 3: If the property receives Drainage Service, calculate the Drainage Benefit Units:
  - Using **Table 3**, determine the Runoff Coefficient.
  - Using **Table 4**, determine Drainage Factor.
  - Calculate the Drainage BU using the formulae above.
- Step 4: If the property has an Agricultural Land Use and is protected by the Yolo By-pass West Levee, calculate the Crop Damage Reduction Benefit Units:
  - Use the average flood depth and **Table 5** to determine the Crop Damage Factor.
  - Calculate the Crop Damage BU using the formula above.

Step 5: If there is a structure on the property and the property is protect by the Yolo By-pass West Levee, calculate the Structure Damage Reduction Benefit Units:

- Use the building type and **Table 6** to determine the assumed foundation height.
- Calculate the depth from finish floor by subtracting the assumed foundation height from the average flood depth. Use the depth from finish floor and the building type to determine the percent structure damage in **Table 7**.
- Using **Table 8**, determine the relative structure value for the building type.
- Calculate the Structure Damage Reduction BU using the formula above.

Step 6 – If the property is a utility easement and it is protected by the Yolo Bypass West Levee, Calculate the Utility Easement Benefit Units:

- Identify whether the utility is above ground or underground and use **Table 9** to determine the Utility Factor.
- Determine the Utility Easement BU using the formula above.

Step 7 – Calculate the amount of Special BU by adding the Drainage BU, Crop Damage Reduction BU, Structure Damage Reduction BU and the Utility Easement BU.

Step 8 – Calculate the assessment amount by multiplying the Special BU times the assessment rate.

- If the property is not located within the District boundary, the assessment amount is zero even if it receives special benefit.
- If the calculated assessment is less than \$25, then set the assessment amount equal to \$25.

The following examples illustrate the application of the assessment formula to determine the annual assessment for a hypothetical property.

The property is a 100-acre farm with no structure located within the boundary of the District. It requires drainage pumping, and has an average flood depth of 3.0 ft.:

Step 1: Based on the description, the property receives drainage service and is protected by the Yolo By-Pass West Levee

Step 2: The Land Use Category is Agricultural; parcel size is 10 acres; no buildings exist on the parcel; Average Flood Depth equals 3.0 ft

Step 3: Calculate Drainage Benefit Units:

- From Table 3, the Runoff Coefficient equals 0.3
- From Table 4, the Drainage Factor equals 2
- From Table 10, the Total Relative Drainage Benefit Units equals 9,000
- $\text{Drainage BU} = (40) \times (0.3) \times (2) \times (100) \div 9,000 = 0.2667$

Step 4: Calculate Crop Damage Reduction Benefit Units:

- From Table 5, using average flood depth of 3 feet, the Crop Damage Factor equals 350.
- $\text{Relative Crop Damage} = (350) \times (100) = 35,000$
- From Table 10, the Total Relative Crop Damage equals 4,066,006.
- $\text{Crop Damage Reduction BU} = (45) \times (35,000) \div (4,066,006) = 0.3874$

Step 5: Calculate Structure Damage Reduction Benefit Units:

- There are no structures present on the property.
- $\text{Structure Damage Reduction BU} = 0.0000$

Step 6: Calculate Utility Easement Benefit Units:

- The property is not utility easement.
- $\text{Utility Easement BU} = 0.0000$

Step 7 – Calculate the amount of Special Benefit Units:

- $\text{Special BU} = (0.2667) + (0.3874) = 0.6541$

Step 8 – Calculate the Assessment amount:

- $\text{Assessment} = (0.6541) \times (\$4,950 \text{ per BU}) = \$3,237.80$

### ***Summary of Assessments***

**Appendix B** provides a detailed listing by Assessor's parcel number of the maximum assessments that will be voted on by the property owners for the proposed Assessment. The total proposed assessment for all parcels by land use category is summarized in **Table 11**.

**Table 11 – Summary of Special Benefit Unit and Annual Assessment by Land Use Category**

Land Use Category	Special Benefit Units	Assessment Amount
Residential	0	\$0
Commercial	0	\$0
Industrial	3	\$0
Rural/Agricultural	85	\$399,626
Vacant	0	\$0
Utility Easement	10	\$49,500
Gas Easement	2	\$8,354
Flood / Drainage Works	0	\$0
<b>Totals</b>	<b>100</b>	<b>\$457,480</b>

## Special Considerations

### ***Gas Easements & Wells***

The natural gas easements and wells receive a special benefit from the drainage and levee O&M services provided by the District. The assessment methodology quantifies the benefit for each active or idle natural gas well as identified on the CA State Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) as a separate structure type. The structure value is based on footprint of roughly 700 square-feet and replacement cost of \$5 million.

### ***Large Properties with Multiple Characteristics***

For large parcels with more than one assessment characteristic (e.g. parcels spanning the Yolo By-pass West Levee), the factors used to calculate the total property benefits units are weighted by the proportional acreage of each characteristic.

### ***Public Parcels***

Consistent with the requirements of Proposition 218, all publicly owned parcels are assessed proportionately to the special benefit they receive. That is, public parcels are treated the same as privately owned parcels for assessment calculation purposes. To calculate assessments for these parcels, a land use category was assigned to each public parcel based on its current use.

### ***Assessment Exclusions***

All parcels within RD 2035 that receive a special benefit from the drainage services provided are assessed. The only parcels excluded are those that are utilized to provide the drainage services, such as detention ponds and canals. These parcels are assigned to the Flood / Drainage land use category.

### ***Minimum Assessment Amount***

Consistent with CA Water Code §51335.5, the minimum assessment will be \$25 to defray RD 2035's cost of collecting each minimum assessment. All annual assessments calculated to be less than \$25 will be raised to the \$25 minimum.

### ***Updating the Assessment Roll***

Recalculating individual parcel assessments on an annual basis accommodates changes within the District over time. These changes can result from development activity such as recordation of subdivision maps, zoning changes, conditional use permits, and lot splits. Placement of a structure on an undeveloped parcel or other changes may trigger a recalculation of the assessment due if there is a change in land use category of the underlying property. When revising the assessment, the properties relative benefit units will be recalculated but the total relative benefit units provided in **Table 10** will remain fixed.

It is recognized that when compiling data for the parcels that constitute the Assessment, the data<sup>2</sup> used to derive individual parcel characteristics may not be accurate and may not precisely fit the intent of the District thus leading to errors and/or circumstances that result in inaccurate assessment calculations. Where such circumstances are discovered, either by the persons administering the assessment or by the owners of the properties affected, the General Manager of RD 2035 (or his or her designee) shall review such circumstances and determine if corrections or adjustments are appropriate. Any such corrections or adjustments are to be consistent with the concept, intent and parameters of the methodology for the Assessment as set forth within this Engineer's Report. Unless such proposed changes are appealed to the RD 2035 Board of Trustees, they will be incorporated into the Assessment roll.

## **5. Assessment Administration**

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### **Implementation**

#### ***Schedule for Collection***

If property owners approve the proposed Assessment, RD 2035 intends to commence collection of the Assessment in FY 2018/19 and continue every year thereafter. Beginning in FY 2018/2019, the RD 2035 Board of Trustees will establish the Assessment Rate each year which will not exceed the maximum approved by property owners plus an annual escalation as described below. The proposed Assessment will remain in effect until terminated by the RD 2035 Board of Trustees.

#### ***Annual Escalation***

In order to ensure that RD 2035 is able to provide the needed services over time, it may be important to increase the Assessment Rate per Special Benefit Unit subject to the rising costs of labor and materials over time. The Assessment Engineer has determined that an appropriate escalation factor is a factor that is reflective of labor (not consumption). Therefore, beginning in FY 2019/20, the maximum authorized assessment will be subject to an annual inflationary

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<sup>2</sup> The Assessment Engineer has utilized data compiled from the Yolo County Assessor to determine the individual property characteristics used as the basis for apportioning special benefit. While the data from the Yolo County Assessor is assumed to be accurate, its primary purpose is for use by the Yolo County Assessor and is subject to the Assessor's standards for accuracy

escalator pursuant to Government Code §53739 (b) based on the annual change in the Consumer Price Index June to June CPI-W<sup>3</sup> for West – Size Class B/C, all Items, with Base Period December 1996 = 100, published by the U.S. Department of Labor, Bureau of Labor Statistics, subject to a minimum of zero percent and a maximum of 2% in any given year. The RD 2035 Board may elect to levy the Assessment up to the maximum authorized Assessment Rate in any given year, based on an annual budget analysis.

## **Appeals of Assessments Levied to Property**

### ***Appeals Process***

Any property owner who believes his or her property should be reclassified and that the individual assessment should be adjusted, may file a written appeal with the Chairman of the Board of Trustees of RD 2035 (Chairman) or his or her designee. Any such appeal is limited to correction of an assessment during the then-current fiscal year and for future years.

All appeals must include a statement of reasons why the property should be reclassified and may include supporting evidence. On the filing of any such appeal, the Chairman, or his or her designee, will promptly review the appeal and any information provided by the property owner and may investigate and assemble additional evidence necessary to evaluate the appeal. If the Chairman finds that the individual assessment should be modified, the appropriate changes will be made to the Assessment roll. If any such changes are approved after the Assessment roll has been filed with the County for collection, the Chairman is authorized to refund the property owner the amount of any approved reduction to the individual assessment for the then current fiscal year. In the event that an appeal is filed and a subsequent adjustment is resulting in a refund, refunds for any prior year's assessments paid before the appeal was filed will not be made.

If a landowner disputes the decision of the Chairman, a secondary appeal may be made to the RD 2035 Board of Trustees, which will consider the matter at a regularly scheduled Board meeting. Any decision made by the Board of Trustees shall be final.

### ***Impact of Appeals during Formation Period***

The data being used by the Assessment Engineer to generate the Assessment Rate defined in **Section 4** comes from the Yolo County Assessor. While the data from the Yolo County Assessor is assumed to be accurate, its primary purpose is for use by the Yolo County Assessor and is subject to the Assessor's standards for accuracy and frequency of update. Because this data is not maintained by the Assessor in a form designed to support this special benefit assessment effort, the Assessment Engineer has worked to refine the data so it properly reflects the conditions present in the physical benefit area.

However, throughout the formation period, data errors and discrepancies with the data may surface and require modification of the assessment calculation for various parcels. Changes in the data for a particular parcel without a

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<sup>3</sup> CPI-W is reflective of the rising cost of labor by urban wage earners versus CPI-U which is reflective of the rising costs of a standardized basket of goods purchased by urban consumers.

corresponding change in the Assessment Rate established by this report will, by definition, change the total amount of assessment levied and collected for that particular parcel. For example, if the data assumes the existence of a house and that house has since burned down and has not been reconstructed, once the database is corrected the rates will generate a smaller total assessment. On the other hand, if the data assumes an empty lot where a house has since been constructed, once the database is corrected the rates will generate a larger total assessment. Due to the database being constantly refined (either through internal review or an external appeal process), it is infeasible to fine-tune the rates between the Preliminary Engineer's Report and the Final Engineer's Report. In addition, because changes to the database will either increase or decrease the total amount assessed, it is presumed that these amounts will roughly offset each other. Therefore, although minor changes to the database will continue to be made during the formation period, the Assessment Rate proposed in this Report will not be fine-tuned, even though that will result in a total assessment which may be slightly less than or slightly more than the amount determined for the development of this report.

### **Future Land Use Changes**

It is anticipated that changes in land use will occur in the District over time which will affect the level of drainage service provided by RD 2035. To accommodate for these changes, individual property characteristics will be reviewed and updated as needed on an annual basis for determining the individual property assessments for the following fiscal year. The annual assessment would increase or decrease depending on the land use changes.

## 6. Conclusions

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It is concluded that the proposed assessments do not exceed the reasonable cost of the proportional special benefit conferred on each property assessed.

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Scott L. Brown, P.E.

**Appendix A**

**Proposed Assessment Roll**

**(Provided under Separate Cover)**