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Knightsen Town Community Services District
P.O. Box 763
Knightsen, CA 94548

November 8, 2019

Sent via e-mail and US Mail to:
Mark Lindley, MLindley@esassoc.com
Tim Jensen,Tim.Jensen@pw.cccounty.us

Mark Lindley, P.E.
Senior Engineer
Environmental Science Associates
550 Kearny Street, Suite 800
San Francisco, CA 94108

Dear Mr. Lindley:

On behalf of the Knightsen Town Community Services District (KTCSD) and the community members we serve, we are writing to provide a written review of Environmental Science Associates (herein referred to as "ESA") draft Storm Water Resources Plan (SWRP) that ESA submitted to the District on July 4, 2019. Before we commence a discussion of the questions, comments and concerns the KTCSD board and the community have about the submitted draft report, we would like to review some background information regarding KTCSD and about the SWRP ESA was commissioned to prepare.

In 2005, KTCSD was formed when citizens in the community of Knightsen passed Measure Z. KTCSD was established, "for the purpose of constructing, operating, maintaining, and servicing flood control and water quality improvements." (Hereinafter referred to as "KTCSD Purposes").

On January 26, 2017, KTCSD entered into an agreement with ESA to develop a SWRP for KTCSD, "to support the implementation of important storm water quality and drainage projects for the community." The agreement included a scope of work and schedule. The agreement and scope of work are enclosed (Enclosure 1).

The scope of work included five tasks in three phases:

Phase 1
Task 1 – Watershed Delineation and Runoff Estimates

Phase 2
Task 2 – Storm Drain Routing and Sizing Recommendations
Task 3 – Develop Conceptual BMP Designs

Phase 3
Task 4 – Cost Estimates
Task 5 – Report and Meetings

The scope of work stated, “We (ESA) anticipate that we will complete each Phase of work within about one to two months, with the Final Storm Water Resources Plan completed within about four to six months.

On July 4, 2019, the draft SWRP was finally received, almost 30 months after the agreement between ESA and KTCSD was signed. It took ESA two and a half years to complete a report they had indicated would only take up to six months to complete. No written explanations for the delay or requests for extensions were received by the District from ESA.

The KTCSD board and community members have reviewed the draft SWRP and have identified a number of questions, comments and/or concerns that we want to bring to your attention. Additionally, addressing numerous errors, omissions, and false narratives that KTSCD and community members have identified merits consideration before any further progress is made with regard to finalizing the SWRP.

Before proceeding with a detailed section by section review of the draft SWRP, we would like to briefly summarize, some of the key questions, comments and concerns which the KTCSD board and members of this community need addressed:

- Revise the report so that it is confined to only what was included in the original scope of work and which is in keeping with the “KTCSD Purposes”. To this end the paramount focus of the report should be to address potential drainage improvement projects for the community of Knightsen.

- Streamline the narrative of the report to eliminate narrative that is unnecessary and in particular narrative that is unsubstantiated, and in many cases even inaccurate, or false. This includes, but is not limited to:

    - Narrative that runoff is “directed”, “routed”, or “discharged” to the proposed wetlands parcel. (Note: KTCSD does not own, operate or maintain any facilities that do this, therefore we have no means to “direct,” “route,” or “discharge” water). Any runoff that may flow to or towards the proposed wetlands parcel flows there naturally, in some cases via ditches and drainage facilities that are privately owned, or owned by Contra Costa County;

    - Narrative that KTCSD or the Knightsen community is “degrading” or “polluting” water, including water that may naturally flow to or towards the proposed wetlands parcel and/or into the river. This is unsubstantiated and possibly false;

    - Narrative that water “flows” from throughout Knightsen to the proposed wetlands parcel and/or into the river. Such language is unproven and unsubstantiated as well as contrary to eyewitness accounts from Knightsen residents. It is also, highly unlikely given the accurate and detailed description of Knightsen’s extremely flat topography which makes any account of “flow” very improbable to say the least.

      The consultant may have confused current circumstances with a future vision of “flow” which could conceivably occur if/when proposed drainage improvement projects are implemented;

- Narrative that describes “flooding” that may be better classified as “standing water,” or “ponding,” (that quickly dissipates).

- Since so much of the proposed project planning is based upon an assessment of “flooding” that occurred in 1998 (including aerial photographs from that time), the consultant should investigate the causes of the “flooding” which it is claimed occurred in 1998. Eyewitness accounts, corroborated by information found in Court documents, supports an account of these drainage issues resulting from circumstances beyond just rainfall events, including manmade interventions (e.g. water emanating from irrigation district facilities that may have been pumped into those facilities). ESA should base runoff flow patterns on current conditions, not an isolated event which occurred over 20 years ago. ESA should observe current flow patterns, as well as interview landowners in the study area.

- The KTCSD board and members of the community attending KTCSD meetings do not support future build out, including build out to five acre parcels. The KTCSD board never endorsed having “build out” be a goal that proposed project plans would be based upon. Therefore, reference to “build out” as a goal of the proposed projects should be stricken from the report and any facility sizing based upon “build out” needs to be amended. Proposed plans and proposed facility sizing should be based on current conditions, not “build out” conditions.

- The proposed project plans should take into account the County’s Public Works Capital Improvement Preservation Program (CRIPP) and any road improvements that may occur as a result of the CRIPP. The consultant should check with the County regarding how these capital improvement projects may impact the proposed drainage improvements.

- The consultant has prepared cost estimates that are admittedly “ball park” and which also do not take into account a myriad of costs necessary to implement the projects (e.g. easements, right-of-ways, purchase of property, engineering costs, etc.). Given that Knightsen is a very small community with a very limited tax base to fund the proposed drainage improvements, understanding the costs associated with these projects is of utmost importance.

  ESA needs to provide more detailed, accurate and verifiable cost estimates, particularly with regard to “design, permitting and construction costs” since these were clearly defined as contract requirements in the scope of work. Since the consultant works closely with the County Public Works Department perhaps they could assist in providing these more detailed and accurate cost estimates?

- Understanding the ongoing costs to administer, operate and maintain any drainage projects that are constructed will be a paramount consideration with regard to KTCSD’s and the community’s decision whether to implement these projects, particularly considering that these costs will not be offset by any grant funding. It is critically important for us to have an understanding of these costs in order to make decisions. Again, perhaps the County Public Works Department may be able to assist in educating us regarding ongoing costs to administer, operate and maintain these facilities.

The following is a section by section review of the questions, comments and/or concerns that have been identified and details regarding changes/revisions which we believe are necessary before this SWRP may be finalized.

Section 1, Introduction and Background

Community members have expressed concern that much of the information provided in this section extends beyond the original scope of work for the Knightsen SWRP as specified in the letter from Mark Lindley and Christie Beeman to Steve Ohmstede and Kim Carone dated December 5, 2016. That original scope of work addressed storm water quality and drainage projects. Without notification to KTSCD, the report which was produced expanded the original scope of work to include: *"support wildlife habitat, increase groundwater supply, and provide environmental and other community benefits."* These were not goals specified in the original scope of work due. Budget was not provided to adequately meet these goals added by ESA.

The habitat and environmental benefits seem to be more oriented towards the design goals of ESA's proposed wetlands project which is being planned by ESA's client East Contra Costa County Habitat Conservancy (ECCHC) and the East Bay Regional Parks District (EBRPD). As has been stated repeatedly by Abigail Fateman, Executive Director, ECCHC, in the two brief presentations by ECCHC to the Knightsen community regarding the proposed wetlands project, KTCSD's proposed drainage project and ECCHC's proposed wetlands project are two unrelated endeavors with separate and independent funding and oversight. The odd and uncomfortable commonality between these two projects is the contracted environmental consultant ESA.

The report states, *"This multi-benefit focus on stormwater management is meant to address legacy issues related to historic development implemented prior to current stormwater management requirements to address increases in runoff associated with development that have contributed to degradation of water quality and impacts to beneficial uses of receiving waters downstream of Knightsen."* It is not clear what the *"legacy"* issues referenced are and no evidence or references/citations are provided proving these statements. Stating that the community is degrading water quality is not substantiated anywhere in the report. Since the Clean Water Act exclusion has expired for the agricultural community, no water quality studies have been performed near the Knightsen study area. Including such an erroneous statement is a potentially false narrative that not only does not benefit KTCSD or the community and may misrepresent the facts, but also acts against the best interests of KTCSD and the community.

The report continues to cite a litany of benefits that again extend well beyond the original scope of work including purported benefits that seem more applicable to the proposed wetlands project and some benefits that seem fanciful for example*, "Supply of fresh water to increase recreational uses including hunting, swimming, fishing, and boating."* None of the KTCSD projects will provide these benefits, and as such the scope added by ESA is not discussed in any further detail in the subsequent report sections.

Sub-section 1.1, Project Area

The district boundaries of KTCSD shown in Figure 1 are incorrect. In particular, the western boundary of the CSD does not extend beyond Sellers Avenue. It is stated, *"The Knightsen SWRP's planning area includes…0.3 square miles within the East Contra Costa County Habitat Conservancy (Habitat Conservancy) parcel just east of the CSD boundary."* We don't know if the Knightsen SWRP planning area and the KTCSD boundaries are coterminous, but most of the ECCHC/EBRPD parcel lies within the

boundaries of KTCSD, not outside the boundaries of KTCSD. Enclosed is the correct map of the KTCSD boundaries (Enclosure 2).

Paragraph 3 states that the overall slope in Knightsen is approximately 0.3%. This slope value seems very low and no evidence, and no citations/references to support this slope value are provided in the report. Nevertheless, the acknowledged very flat topography of Knightsen does draw into question ESA's statements that storm water runoff *"flows"* in any significant manner, let alone in the manner ESA describes in subsequent paragraphs.

Paragraph 4 discusses how runoff purportedly flows in Knightsen and again no evidence and no citations/references proving these statements are provided. Community members living in the immediate study area and witnessing decades of runoff patterns dispute that, *"Runoff generated in the central portions of Knightsen drains toward No Name Slough."* The term "runoff" is not quantified and too broad a term to be technically accurate as used in this sentence. It is not clear what area *"central Knightsen"* encompasses and residents who live in what may be considered the central area of Knightsen have stated that they don't observe *"run off"* draining in the manner you state. In fact many residents state there is little to no runoff observed whatsoever.

It is stated that this runoff from central Knightsen *"is currently pumped over an existing levee into No Name Slough."* We understand that the owner of what is now the proposed wetlands parcel pumps water from that property into the slough, but it is not at all clear how much, if any, of that water comes from neighboring parcels let alone from parcels in *"central Knightsen."* Again, this technically unsubstantiated statement about pumping over an existing levee acts against the best interests of KTCSD and the Knightsen community.

Paragraph 5 describes how features constructed over decades or even centuries have disrupted the flow of water and this, *"restricts drainage and results in relatively frequent flooding in some areas of the community."* Again, given the acknowledged extremely flat terrain of Knightsen it is unclear how much *"flow"* would occur even if these features did not exist. Nevertheless, the depiction of *"relatively frequent flooding"* is not substantiated in the draft report or by discussions with Knightsen community members living in the study area. In the winter time standing water forms in unplanted fields, but that is useful for recharge of ground water for farming. Also, from time to time there may be localized drainage issues and perhaps some "ponding" of water, but we do not believe it is accurate to characterize these as *"relatively frequent flooding."* Again, we consider this to be false narrative.

It is stated*, "Agricultural drainage ditches and pumping operations influence the direction of flow within the Habitat Conservancy parcel and Veale Tract, directing the majority of runoff from the watershed to No Name Slough."* The grandious statement that the *"majority of runoff from the watershed"* is directed by ditches and pumping to the Conservancy parcel and Veal Tract is not technically substantiated in the report AT ALL, and is absurd.

Paragraph 6. It is stated, *"The flat topography in Knightsen is further exacerbated by the circuitous path that runoff flows through the community."* Railroad, roads, ditches and culverts result in a meandering *"flow."* Again, there is no proof that much, if any of the rainfall in most of Knightsen ever *"flows"* in the long, winding manner portrayed. It is quite plausible due to the flat topography and we believe far more accurate that rainfall percolates into the ground not far from where it falls in the majority of the flatlands of Knightsen, as long as a high groundwater table does not impede this percolation.

Sub-section 1.2, Flooding

The statement that, *"The community of Knightsen has experienced both large flood events with widespread impacts and nuisance flooding during more frequent wet years,"* is not technically supported and it is not at all clear what *"nuisance flooding"* refers to. There have been some localized drainage issues in the past and standing water occurs from time to time particularly in areas where the standing water has beneficial effects (e.g. in agricultural fields). References are made to rainfall events dating back to 1982 and 1998, but the report does not reference more recent high rainfall events (e.g. 2017 and 2019) that do not support the narrative claims of flooding.

ESA identifies localized areas that are more prone to drainage concerns, but the references to *"clogged"* culverts draw in to question how drainage concerns could be alleviated if Contra Costa County were to properly maintain its existing ditches and culverts and if property owners were to properly maintain the driveway culverts that are their responsibility to maintain. Enclosed is a document showing the drainage facilities maintained by Contra Costa County (Enclosure 3 - Knightsen Area Drainage Facilities).

Reference is made to aerial photos from 1998 which purportedly show *"flooding,"* the origin of which was unique to that time period and is subject to dispute. At the July 11, 2019 outreach meeting held by the ECCHC, community members stated that water emanating from the East Contra Costa Irrigation District facilities contributed to the drainage issues in 1998. Based on KTCSD's recent research, there is credible evidence in Court records to substantiate that the 1998 flood event was the result of one time issues with the Irrigation District facilities, thereby indicating storm water runoff alone did not cause the drainage patterns shown in the 1998 aerial photos and drawing into serious question any assessment of *"flooding"* and/or how water naturally flows based on the aerial photos included in your report. Numerous community members living in the study area with supporting technical, and some with significant technical training in engineering and geology, refute the drainage patterns presented in the 1998 aerial photos. As such, these dated and inaccurate 1998 photos should be deleted from the report. Importantly, the drainage patterns of the study area should not be solely based on a set of aerial photos over 20 years old in a populated agricultural residential community.

Sub-section 1.3, Water Quality Issues

It is stated, *"Maintaining and improving the quality of runoff discharged from Knightsen into the Delta is a key objective of this SWRP."* We have reviewed the scope of work and find no justification for this overreaching and technically vague objective of the SWRP, particularly when considering the limited financial resources of the Knightsen community. Measure Z referred *to "water quality improvements,"* but the wording in the ballot measure referred specifically to improving water quality <u>for the community of Knightsen</u> and in particular well water quality since the residents of Knightsen rely on wells for their water supply.

Unsupported assertions are made that water from Knightsen is polluting the Delta. It is stated, *"agricultural runoff has been pumped into the drainage ditch system and ultimately into No Name Slough adding to water quality impairments in neighboring Rock Slough and the Contra Costa Canal."* That statement is unsubstantiated. No references/citations supporting such a statement are provided by ESA. It is an all-encompassing narrative of very dubious foundation that could pose considerable harm to the reputation and welfare of the community. The inclusion of this unsupported and harmful assertion by ESA in this draft report raises serious concerns as to the intent of ESA to represent the best interests of its client KTCSD in the content of the report … particularly when water quality was a project objective added by ESA without discussion with the current KTCSD board.

It is stated, *"The CSD plans to complete a water quality sampling study to identify specific contaminants to be targeted by future facilities."* We have searched the record of past KTCSD meetings and the board has never proposed or agreed to complete such a sampling program. Given the complexity of a water quality sampling study in a study area largely unstudied, we are alarmed by the casual inclusion of this technical commitment in a widely distributed draft report.

Sub-section 1.4, Prior Studies

The prior studies referenced here are all out-of-date and some of them are of questionable validity. We believe it is not necessary, or appropriate to list them in the report.

Sub-section 1.5, Knightsen Community Services District

ESA states, *"The CSD was created…to enhance water quality and flood control services that were previously provided by Contra Costa County."* This statement is incorrect. Contra Costa County continues to provide flood control services to the community.

We do not believe that it is necessary to include a description of the District in the report. If such a description is needed, we believe it should be prepared by KTCSD and the language should draw solely and directly from the ballot measure that established the District in 2005.

Sub-section 1.6, Habitat Conservancy Parcel

Since the proposed wetlands project and the seven proposed KTCSD projects are separate projects, we do not believe this section is necessary. In any case, it is not correct to state that there is an *"agreement"* between KTCSD and the Habitat Conservancy since no such agreement currently exists. Also, there are presently no commitments between KTCSD and ECCHC/EBRPD regarding a Memorandum of Understanding. With regard to this section, KTCSD intends to only consider benefits that relate to what was included in the original scope of work and which address the "KTCSD Purposes".

Consideration of any other benefits aside from those which were part of the mandate voters approved should not be significant considerations when determining which projects are priorities. In addition, potential benefits which may be derived from the proposed ECCHC/EBRPD wetlands project should not be considerations since that project is entirely separate from the proposed KTCSD projects.

In summary, we believe that much of the information included in Section 1 (including sub-sections 1.1 through 1.6) is undocumented, unsubstantiated, incorrect and largely unnecessary. It addresses matters which are beyond the scope of work as detailed in your letter dated December 5, 2016. We believe the best course of action may be to remove Section 1 (including the sub-sections) from the report in its entirety.

Section 2, Hydrology (including sub sections 2.1 -2.4)

KTCSD has not undertaken a detailed analysis of the mathematics involved in ESA's hydrologic assessment and subsequent modeling, since several key assumptions are provably incorrect. The incorrect assumptions that provide the foundation of the hydrologic assessment are discussed below.

The report states that the hydrology estimates focus on three different scenarios, one being "*Potential build out land use with the proposed changes to the existing drainage network. Currently, subdivision of parcels in much of Knightsen is restricted to a 10-acre minimum parcel size due to the existing drainage and flooding issues. The build out land use considered subdivision of larger parcels east of the Santa Fe*

railroad to create 5 acre parcels." Further ESA states, *"Based on discussions with Contra Costa County Flood Control District and the Knightsen CSD, sizing for ditch culvert improvements were based upon the build out land use with the proposed diversion culverts."*

It is important to note that community members attending KTCSD meetings have expressed NO interest for *"build out"* in Knightsen. In fact, we have found many, perhaps most community members in Knightsen voted for Measure Z believing that having a community services district would prevent the cities of Oakley and Brentwood from expanding into Knightsen and thereby keep Knightsen rural. We believe the desire to prevent build out and denser residential habitation is widespread in Knightsen. We find no record of the KTCSD board ever formally endorsing five acre build out and the current board does not endorse five acre build out. Contra Costa County was not a party to the agreement between KTCSD and ESA that authorized the preparation of the SWRP report. If the County has a desire to facilitate 5 acre build out, that is a non-factor in regards to this report.

As discussed in Sub-Section 1.2, the runoff patterns provided in the extreme and unique flood event in 1998 (over 20 years ago), do not represent current or desirable runoff patterns. Yet these 1998 flooding patterns were erroneously used by ESA to define the hydrology of the study area.

Also in Section 2, reference is made to *"flooding"* in various areas where we dispute whether flooding occurs including *"downtown Knightsen,"* Delta Road/Byron Highway and Byron Highway/Ironhorse Road.

In summary, this section as well as the hydrologic calculations/modeling for the entire report should be rewritten/recalculated to account for current land use conditions, not build out land use conditions. The hydrologic modeling should be focused on current surface water flow patterns and current or feasible drainage easements, which are technically justified. Care needs to be exercised with regard to classifying drainage issues as "*flooding*" unless the use of the term is justified by established and verified evidence.

Section 3, Proposed Stormwater Management Projects

In this section there is again reference to project goals that are beyond the original scope of work as specified in 2016. For instance, the report states, *"These proposed projects have been developed to provide water quality treatment, groundwater recharge, habitat and other benefits to the community. The projects have been analyzed to quantify potential benefits in four primary areas identified by the State Water Board including water quality improvements, groundwater recharge, flood reduction, and environmental/community benefits "* Interestingly, the first sentence doesn't even reference the paramount goal of the proposed projects which is drainage.

Sub-section 3.1, Goals and Objectives for Proposed Projects

The report states, *"The Knightsen CSD working in conjunction with Contra Costa County Flood Control and Water Conservation District (CCCFCD) identified the following objectives for proposed stormwater management projects:*

1. *Flood Reduction – to the extent possible, proposed projects should reduce flooding to areas that have historically been impacted by more significant and/or nuisance flooding.*

2. *Groundwater Recharge – where possible, proposed projects should capture runoff for groundwater recharge to support sustainable groundwater levels and increase local water supplies.*

3. *Water Quality Improvements – proposed projects should provide improved water quality for runoff that is ultimately discharged to the San Joaquin Delta near Contra Costa Water Districts Rock Slough inlet to address existing TMDLs.*

4. *Habitat Enhancement – support habitat creation at the Habitat Conservancy Parcel by increasing the supply of freshwater to sustain aquatic life and wildlife habitats."*

It is unclear when all these became objectives of KTCSD as well as objectives for this report. ESA states that these objectives were set by KTCSD in conjunction with County Flood Control, but there is no evidence in the record that these objectives were adopted by the KTCSD board in open public session. Again, neither Contra Costa County, nor the Contra Costa County Flood Control District were parties to the agreement between KTCSD and ESA that authorized the preparation of the SWRP report.

The primary reason KTCSD officially exists and the primary reason why the report was commissioned is related to drainage and water quality for the community of Knightsen. Other objectives should not be referenced unless they have been formally adopted by the KTCSD board in open, public session.

ESA's report lists six goals *"Knightsen CSD, CCCFCD, and ESA"* developed to meet the above objectives. Again, we have found no evidence that these goals were approved by the KTCSD board in open, public session. There is particular concern about goal number 5 which states, *"consider appropriate sizing of drainage facilities (ditches, culverts) to allow for changes to the current limitations on minimum lot size from 10 acres to 5 acres."* Concerns about this goal are two-fold: 1) there is no evidence that this goal was ever adopted by the KTCSD board in open, public session; and, 2) the fact that this goal was taken in to consideration in drainage calculations draws into question the validity of any drainage facility (ditches, culverts) sizing that took this reduced parcel size into account.

The goals and objectives of the report need to be restated to only reflect the goals and objectives as indicated in the scope of work agreed to between KTCSD and ESA in December 2016.

Section 3.2.1, Curlew Connex Infiltration Basin Retrofit - (Project 1)

There is no documented proof of the statement that this area, *"has historically experienced flooding during periods of significant rainfall,"* and without verified evidence of this *"flooding"* the statement should be removed from the report. The statement, *"Knightsen CSD required a new building (Knightsen Church) at the corner of Curlew Connex and Delta Road to include an infiltration basin as part of their redevelopment plan,"* is not accurate. KTCSD did not even exist when the permit for the church was approved in 2004.

The statement, *"the basin was sized to contain runoff from the upgradient watershed that drains towards the Curlew Connex area,"* may also be inaccurate. It is our understanding the basin was only sized to contain runoff from the church property. Furthermore, it is our understanding that no requirement has been imposed on the property owner to permit the basin to receive runoff from neighboring properties or roadways. These matters should be discussed with Contra Costa County for purposes of verification since they authorized the permit for this facility.

Because the basin may not have been sized to accept runoff from neighboring properties and because there may be no requirement for the property owner to allow runoff from neighboring properties to enter the basin, there may be very significant flaws associated with the plans to implement this project. If the District were to consider this project, the following additional factors would need to be taken in to account:

1) Obtaining authorization from the property owner to allow run-off from neighboring properties to enter the basin. This could result in additional costs for KTCSD;

2) Determining whether the basin is sized to accommodate run-off from neighboring properties;

3) Increasing the size of the basin of the basin if that is required.

ESA should determine if the existing basin is appropriately sized to accommodate Project 1 and if it is not, then that needs to be factored in to the Project BMP's and cost estimates.

This proposed project includes plans for ditch improvements along Delta Road past the intersection with Peach Tree Lane. Community members who live in this vicinity have told us there are no drainage issues in this area. Therefore, it is questionable whether drainage improvements in this area are needed.

The County's Public Works Capital Improvement Preservation Program (CRIPP) describes the County's plans for road improvements through the end of Fiscal Year 2024/2025. The CRIPP includes plans to widen the road shoulders of Delta Road from Sellers Avenue to Byron Highway. The District questions how the County's road improvement plans will impact the proposed projects. If the County will be improving the shoulders will this result in replacement of any ditches/culverts that currently exist, or that may be constructed if the proposed projects are implemented?

Since the basin was constructed by the private property owner and to date has been maintained by the private property owner, if KTCSD were to increase the size of the basin and/or route run off to the basin, who would be responsible for maintaining the basin, the private property owner, KTCSD, or would it be a joint endeavor?

Community members asked whether the high water table in the area would impact the ability of ditches to convey runoff.

The plan to, *"Divert runoff that exceeds the capacity of the infiltration basin away from downtown Knightsen in a new ditch that would connect to an existing ditch along Knightsen Ave (see Project 2),"* may not be practical if Project 2 is not able to receive water from Project 1. (This is discussed in more detail under the analysis of Project 2).

Section 3.2.2, Knightsen Avenue Bioswale – (Project 2)

There is no documented proof of the statement*, "The Knightsen Avenue area in downtown also experiences flooding,"* and without verified evidence of this *"flooding"* the statement should be removed from the report.

The report states, *"there is an existing undeveloped area between Knightsen Ave. and the Santa Fe Railroad that is currently in public ownership (by Contra Costa County). The Knightsen CSD identified this area for a possible stormwater project."* In the District's files we discovered a document that was sent by Randolf Sanders, Staff Engineer, Contra Costa Flood Control, to Steve Ohmstede, former Chair,

KTCSD, dated April 4, 2017 (Enclosure 4). That letter states, **"According to County's Real Property Division, easement wording for flood water detention basin within a transportation ROW might be limited to only flows generated by the adjacent road and site area. This might prohibit the KCSD from conveying flows generated west of Delta Road and Knightsen Avenue intersection."**

If this is accurate, any plans to move water from Curlew Connex and/or the downtown area of Knightsen to the basin proposed for Project 2 cannot be accomplished. If Project 2 cannot be done then that may impact whether Projects 1, 3 and 4 are even needed or practical.

ESA should review the contents of the April 4, 2017, Sanders memo with representatives from County Public Works to determine whether this impacts the feasibility of Project 2 (as well as connected projects 1, 3 and 4) and if necessary revise the report accordingly.

The County's CRIPP includes plans to widen the road shoulders of Delta Road from Sellers Avenue to Byron Highway and to widen shoulders along Knightsen Avenue/Eden Plains Road from Delta Road to Chestnut Street. The District questions how the County's road improvement plans will impact the proposed projects. If the County will be improving the shoulders will this result in replacement of any ditches/culverts that currently exist, or that may be constructed if the proposed projects are implemented?

The report states, *"The existing culvert that crossed Delta Road is clogged by sediment and has been deformed (crushed) due to settlement along Delta Road."* The County's Public Works Drainage Responsibilities document shows that this culvert is owned and maintained by Contra Costa County. Therefore, isn't it the County's responsibility to maintain this culvert and repair it if it has been damaged? (Also: note the County's Public Works Drainage Responsibilities document shows the existing culvert is 18 inches, while the Project Description for Project 2 states the existing culvert is 24 inches to be replaced with a 30 inch culvert).

In the Project Description for Project 2 it states, *"In the future, the bioswale could be filled to permit widening of Knightsen Rd."* This draws in to question the ultimate need for Project 2 if it could simply be filled to allow for road widening.

Community members had additional questions regarding Project 2:

1) How will a bioswale running along Knightsen Avenue impact nearby properties including properties on the other side of the railroad tracks? Will the bioswale increase groundwater tables?

2) Why is a bioswale proposed instead of a ditch?

3) Will a bioswale effectively remove possible contaminants in the water?

4) Will we be required to control what water is allowed in to the bioswale? If yes, how would that be done?

Section 3.2.3, Eden Plains Road Treatment Wetland Basin – (Project 3)

The report states that in relation to the proposed location for the treatment wetland basin, *"While the area is currently under private ownership, the Knightsen CSD has reached out to the owner regarding developing an easement or property transfer to allow for implementation of a project in this area."* We

have researched the District's files and we find no evidence of any discussions with this property owner at all. We do not know if the current property owner would be willing to consider granting an easement and in fact we do not know if the current property owner is even aware of this matter. Regardless, there may be additional and considerable costs associated with securing an easement or property transfer.

As stated previously if the District is unable to secure an easement for run-off to move from downtown Knightsen and the Curlew Connex area (Sanders memo, 4/4/17), then the need or practicality of Projects 1, 2, 3 and 4 are drawn into question.

The County's CRIPP includes plans to widen the shoulders along Knightsen Avenue/Eden Plains Road from Delta Road to Chestnut Street**.** The District questions how the County's road improvement plans will impact the proposed projects. If the County will be improving the shoulders will this result in replacement of any ditches/culverts that currently exist, or that may be constructed if the proposed projects are implemented?

The County's Public Works Drainage Responsibilities document indicates the existing culvert crossing Eden Plains Road is a 15 inch culvert not 24 inches as stated in the project description for Project 3. How does this impact project design, costs, and the calculations?

Section 3.2.4, Santa Fe Railroad Bioswale and Infiltration Basins – (Project 4)

The report states, *"The Railroad has an existing ROW adjacent to the railroad embankment which could be utilized for drainage improvements with an easement from the Santa Fe Railroad. Additional easements from current property owners may be required to cover the full footprint of this project."* The cost to obtain such easements could be very substantial and none of this has been factored in to cost projections to do these projects. Furthermore, community members raised questions as to whether the railroad would even be willing to grant an easement for a drainage facility so close to the above grade railroad tracks considering the risk of undermining the base rock of the tracks. Several of the proposed drainage easements would be harmful to current property owners, removing considerable acreage from use, putting current privately owned buildings and pastures at risk for flooding. Parcels near the proposed drainages would be at risk for changes in their flood zone designation

As stated previously if the District is unable to secure an easement for run-off to move from downtown Knightsen and the Curlew Connex area (Sanders memo, 4/4/17), then the need or practicality of Projects 1, 2, 3 and 4 are drawn into question.

Community members questioned what happens to any run off that flows through the culvert(s) under the railroad tracks from proposed Project 4. This is not clearly stated in the report.

Numerous technical errors are noted in the Project 4 design, as follows:

- The project description for Project 4 states the current culvert under the railroad tracks is a 30 inch by 18 inch wooden box culvert. KTCSD board members went onsite to this location and took photos of two side-by-side 24 inch CMP culverts, not the one box culvert as stated in the draft SWRP. How does flawed assumption impact project designs and costs?

- The runoff volumes presented in Table 2 between existing and proposed drainage are identical for the Railroad and Ironhorse road model results which is technically impossible. The proposed drainage design provides significant changes in the surface elevations of the

drainage pathway for both locations, which would significantly change proposed runoff volumes as compared to existing runoff volumes. Also, the runoff volumes calculated for existing conditions for the Railroad and Ironhorse road pathways did not exist during the 5-, 10-, and 25- year storm events occurring since 1998, as evidenced by current conditions and current land surface topography.

- Given the narrowness of the Ironhorse Road easement, addition of drainage channels is impractical… and unnecessary based on historical surface water flows. The design for the proposed Railroad and Ironhorse road drainage channel is seriously flawed based on current surface flow conditions and available land space.

- The bioswales are sized for very small (Table 4) rainfall events (1.7 acre-feet), and do not appear to address water quality during even the five year storm event.

Section 3.2.5, Eagle Lane Diversion and Bioswale – (Project 5)

The title of this proposed project should be amended since the proposed *"bioswale"* is not a KTCSD project, but a part of the proposed Wetlands project which is a separate project proposed by separate entities (Habitat Conservancy/EBRPD).

The report states, *"During the development of potential stormwater management project concepts, community members noted that the Eagle Lane triangle located south of the Habitat Conservancy Parcel, experienced occasional drainage issues and elevated stormwater levels during high rainfall seasons."* During KTCSD meetings, comments received from Eagle Lane residents draw in to question the accuracy of these statements. Some Eagle Lane residents currently receive drainage services in accordance with an agreement with the East Contra Costa County Irrigation District.

The report also states, *"The Eagle Lane triangle receives runoff from south Knightsen (south of Sellers Road) via an existing culvert under the Santa Fe Railroad to the west of the Eagle Lane triangle."* There are two problems with this sentence: 1) Sellers Avenue runs north/south so a reference to "south of Sellers Road" does not make sense; 2) Based upon discussions with Knightsen residents the runoff through the railroad culvert to Eagle Lane has not been observed. Again, there is concern about a false narrative of runoff "flowing" in Knightsen.

The report states, *"This runoff in addition to runoff generated locally is currently routed to the east and is discharged through an existing culvert into No Name Slough."* If this statement is accurate, we need further explanation as to why the plan to install a culvert routing the runoff to the proposed wetlands project is necessary.

Community members raised questions whether channeling runoff to the wetlands will pose risks with regard to rising water tables for residents in the Eagle Lane area.

Furthermore, Eagle Lane is a private road, not a public right of way. Questions were raised regarding why KTCSD should assume responsibility for drainage ditches and culverts on a privately owned road. Additionally, since Eagle Lane is a private road, there may be an issue with regard to KTCSD having to obtain permission, or actually purchase easements or properties to install ditches and culverts. This could result in significantly increased costs for KTCSD.

It is our understanding that the East Contra Costa County Irrigation District owns, operates and maintains irrigation and/or drainage structures between Eagle Lane and the proposed wetlands parcel.

If this is accurate, then clearly the Irrigation District would need to be consulted and involved in project planning.

The report details proposed project elements that would be the responsibility of KTCSD and proposed project elements that would be the responsibility of ECCHC/EBRPD. *"Note that this project would be implemented in coordination between the Knightsen CSD and the Habitat Conservancy, with the CSD responsible for the drainage improvements to divert runoff to the Habitat Conservancy Parcel and the Conservancy responsible for implementing the infiltration basin, bioswale and wetland depressions, and native plantings on the Conservancy Parcel."*

In order to avoid any confusion regarding which proposed project elements would be the responsibility of ECCHC/EBRPD and which proposed project elements would be the responsibility of KTCSD, the report should be amended to only describe proposed project elements that are the responsibility of KTCSD. As a result, the following language should be removed from the report:

> *~~"3. Excavation of an infiltration basin in a sandy area on the Habitat Conservancy Parcel at the diversion culvert outfall to support groundwater recharge.~~*
>
> *~~4. Excavation of a bioswale with wetland depressions to provide water quality treatment while routing runoff across the Habitat Conservancy Parcel to gravity discharge to restored tidal wetlands and No Name Slough.~~*
>
> *~~5. Improve habitat values of the bioswale, wetland depressions, and infiltration basin with seeding and planting of native plants.~~*
>
> *~~Note that this project would be implemented in coordination between the Knightsen CSD and the Habitat Conservancy, with the CSD responsible for the drainage improvements to divert runoff to the Habitat Conservancy Parcel and the Conservancy responsible for implementing the infiltration basin, bioswale and wetland depressions, and native plantings on the Conservancy Parcel.~~"*

Section 3.2.6, Byron Highway Diversion and Bioswale – (Project 6)

The title of this proposed project should be amended since the proposed *"bioswale"* is not a KTCSD project.

Again, the report refers to *"flooding"* that has not been substantiated.

One proposed project element is, *"1. Excavation of a new ditch along Ironhorse Road to route runoff to new Byron Highway Diversion."* Two property owners, both of whom have resided on Ironhorse Road for over 21 years, informed us there are no flooding issues along Ironhorse Road. One also stated there was a problem during the 1998 event, but that problem was resolved. This is yet another example of a false narrative of runoff "flow."

Since Ironhorse Road is a private road, there may be an issue with regard to KTCSD having to obtain permission, or actually purchase easements or properties to install ditches and culverts. This issue could be exacerbated if the road is not wide enough to install ditches. This could result in significantly increased costs for KTCSD that are not accounted for in the draft report.

Moreover, there are Irrigation District tile drains that run along Ironhorse Road. There is no mention or consideration of this in the report and what impact this may have on the proposed project. Additionally, the Irrigation District needs to be involved in project planning.

The County's CRIPP includes plans to widen the shoulders along Byron Highway from Delta Road to Chestnut Street. The District questions how the County's road improvement plans will impact the proposed projects. If the County will be improving the shoulders will this result in replacement of any ditches/culverts that currently exist, or that may be constructed if the proposed projects are implemented?

As with Project 5, the report details proposed project elements that would be the responsibility of KTCSD and proposed project elements that would be the responsibility of ECCHC/EBRPD. *"Similar to Eagle Lane, this project would be implemented in coordination between the Knightsen CSD and the Habitat Conservancy, with the CSD responsible for the drainage improvements to divert runoff to the Habitat Conservancy Parcel and the Conservancy responsible for implementing the infiltration basin, bioswale and wetland depressions, and native plantings on the Conservancy Parcel."*

In order to avoid any confusion regarding which proposed project elements would be the responsibility of ECCHC/EBRPD and which proposed project elements would be the responsibility of KTCSD, the report should be amended to only describe proposed project elements that are the responsibility of KTCSD. As a result, the following language should be removed from the report:

> *"~~3. Excavation of an infiltration basin in an area of sandy soils on the Habitat Conservancy Parcel at the diversion culvert outfall(s) to support groundwater recharge.~~*
>
> *~~4. Excavation of a bioswale with seasonal wetland depressions to provide water quality treatment while conveying runoff towards restored tidal wetlands along No Name Slough.~~*
>
> *~~5. Improve habitat values of the bioswale, wetland depressions, and infiltration basin through seeding and planting of native plants.~~*
>
> *~~Similar to Eagle Lane, this project would be implemented in coordination between the Knightsen CSD and the Habitat Conservancy, with the CSD responsible for the drainage improvements to divert runoff to the Habitat Conservancy Parcel and the Conservancy responsible for implementing the infiltration basin, bioswale and wetland depressions, and native plantings on the Conservancy Parcel."~~*

Section 3.2.7, Delta Road Seasonal Treatment Wetlands – (Project 7)

The title of this proposed project needs to be amended since the proposed *"seasonal treatment wetlands"* is not a KTCSD project.

The report states*, "Currently the majority of the runoff from Knightsen flows along Delta Road to the Habitat Conservancy Parcel where it is routed to a pump station and pumped to No Name Slough."* This sentence is inaccurate on several accounts. It is unproven and we believe it is unlikely that *"the majority"* of Knightsen's runoff flows all the way to the ECCHC/EBRPD parcel. Additionally, we do not believe the runoff is *"routed"* in any manner to the pump on the ECCHC/EBRPD parcel. The runoff is certainly not directed in any manner by KTCSD. If the water is *"routed"* or *"directed"* on the ECCHC/EBRPD parcel, it is routed or directed by the property owner, not KTCSD. This needs revision in the draft report.

The report goes on to state, *"At Byron Highway, Contra Costa County has a 30-inch culvert to route runoff to the east across Byron Highway. However, east (downstream) of Byron Highway most of the existing, private driveways have 12- to 18-inch diameter culverts many of which are partially clogged with sediment. These existing, undersized culverts significantly impede drainage from the south and west*

of the Delta Road and Byron Highway intersection, and contribute to some of the most significant flooding impacts in the community." As stated in the report, there are existing culverts owned and maintained by the County and private property owners that are clogged. It is unclear the extent to which proper maintenance of these ditches and culverts maintained by the County and clearance of these clogged culverts by the property owners would mitigate any current drainage issues.

It would seem that a logical first step prior to KTCSD, or any entity, implementing improvements would be to have the County and property owners clear and properly maintain the culverts they own.

The County's CRIPP includes plans to widen shoulders along Byron Highway from Delta Road to Chestnut Street, and to widen shoulders along Delta Road from Byron Highway to Holland Tract Road, and to widen shoulders along Delta Road from Sellers Avenue to Byron Highway. The District questions how the County's road improvement plans will impact the proposed projects. If the County will be improving the shoulders will this result in replacement of any ditches/culverts that currently exist, or that may be constructed if the proposed projects are implemented?

As with Projects 5 and 6, the report details proposed project elements that would be the responsibility of KTCSD and proposed project elements that would be the responsibility of ECCHC/EBRPD. *"The Delta Road Seasonal Treatment Wetlands Project (Figure 15) combines improvements to the existing undersized culverts with construction of a seasonal wetland on the Habitat Conservancy Parcel intended to provide water quality treatment during the rainy season and critical muted tidal giant garter snake habitat in the dry season."*

In order to avoid any confusion regarding which proposed project elements would be the responsibility of ECCHC/EBRPD and which proposed project elements would be the responsibility of KTCSD, the report should be amended to only describe proposed project elements that are the responsibility of KTCSD. As a result, the following language should be removed from the report:

> *"~~3. Construction of a seasonal wetlands complex designed to provide stormwater storage and treatment during the rainy season and giant garter snake habitat during the dry season.~~*
>
> *~~4. Construction of a low berm and dune features along the perimeter of the seasonal wetland complex to limit runoff from flowing towards the neighboring Veale Tract.~~*
>
> *~~5. Improve habitat values of the bioswale, wetland depressions, and infiltration basin through seeding and planting of native plants.~~"*

The report states that the proposed project would include, *"2. Installation of diversion culverts to the Habitat Conservancy Parcel."* However, in the project detail it states that these culverts would be, *"Implemented by Restoration Project."* If these proposed culverts are to be installed by ECCHC/EBRPD as part of their project, then in order to avoid confusion, this item should be removed from KTCSD's report. If the statement that these culverts are the responsibility of the Restoration Project is in error, then that statement needs to be removed from the report and cost estimates updated to include the cost of these culverts.

Section 3.3, Project Benefits

With regard to this section, KTCSD intends to only consider benefits that relate to what was included in the original scope of work and which address the "KTCSD Purposes".

Consideration of any other benefits aside from those which were part of the mandate voters approved should not be significant considerations when determining which projects are priorities. In addition, potential benefits which may be derived from the proposed ECCHC/EBRPD wetlands project should not be considerations since that project is entirely separate from the proposed KTCSD projects.

This section needs to be revised taking these circumstances into consideration.

Section 4, Drainage Improvements/Hydraulics (including sub-sections 4.1, Culvert Capacity and Sizing, 4.2, Ditch Sizing and 4.3 Ditch and Culvert Sizing Considerations)

With regard to this section and sub-sections, since the District and the community do not endorse build out (subdivision of existing parcels to less than 10 acres), flows and facility sizing needs to be recalculated based upon current circumstances.

Section 5, Cost Estimates for Stormwater Management Facilities & Section 5.1, Construction and Implementation Cost Estimates

Concern is expressed regarding the statement*, "At the conceptual level these costs are relatively rough 'ball park' estimates as many details related to each proposed project are not well defined, and as designs are further developed unanticipated constraints and requirements could significantly change (usually increase) potential project construction costs."* Given this statement, it is difficult for the Board and this community to accept the validity and accuracy of the cost estimates provided.

Furthermore, we understand that recently the County Public Works Department replaced one culvert crossing Orwood Road in Knightsen and the lowest responsible and responsive bid for that one culvert was $257,150 and that estimate did not include design costs. Given this, it heightens our concerns about the validity and accuracy of the cost estimates that were provided.

Knightsen is a very small community with an extremely limited tax base. We need more concrete information regarding the cost of these projects, with or without potential grant funding, in order to make decisions whether to carry out these projects. **Any information ESA can obtain with regard to providing more concrete cost data is imperative with regard to our decision making analysis. Since ESA has been working closely with the Contra Costa County Public Works Department throughout this process, perhaps County Public Works/Flood Control can provide assistance in this regard.**

The report states, *"Additionally, the cost estimates include rough estimates of engineering, permitting and CEQA related costs assuming that some (but not all) of the proposed projects will ultimately be implemented."* Again, given this statement, it is difficult for the Board and this community to accept the validity and accuracy of the cost estimates provided. We would also add that the cost estimates do not include potential costs for easements and/or property acquisitions which would be necessary to implement many, if not most of these projects.

The scope of work in the agreement between KTCSD and ESA includes, "Develop Cost Estimates - ESA will develop cost estimates to implement the recommended stormdrainage improvements and stormwater treatment facilities. The cost estimates will include design, permitting, and construction costs for stormdrain improvements and stormwater treatment facilities." The scope of work was not to provide mere "ball park" estimates. ESA needs to provide much more detailed, accurate and verifiable cost estimates before any report may be finalized.

We do appreciate ESA's efforts to identify "base project" elements separate from "optional drainage improvements" since this could be very useful with regard to prioritizing projects.

The report states, *"Additionally, it's not clear who would be responsible for many of the drainage improvements, since most of these improvements would occur on ditches that are on private property or possibly within the County's ROW for the adjacent roadway and associated drainage easements."* We agree that financial responsibility for these projects is a very key matter and **it is more accurate to state that ALL the proposed drainage improvements are either on private property or within the County's right-of-way. The Knightsen Town Community Services District does not own any property, including culverts, ditches, or drainage facilities of any kind.**

The report also states, *"Finally, operation and maintenance costs for Knightsen CSD to maintain the proposed projects, operate stormwater pumps, and/or other incidental costs to the Knightsen CSD have not been estimated at this stage."* This board and this community are concerned about how such a small community with an extremely limited tax base would ever be able to fund ongoing operation, maintenance and administration costs particularly given these costs would not be offset by grant funding. **Any information that could be provided with regard to estimating the ongoing costs to administer, maintain and operate proposed facilities would be critical with regard to helping KTCSD and this community determine whether implementing any of these projects is feasible. In this regard, perhaps County Public Works could provide assistance with regard to ongoing operation, maintenance and administration costs.**

Table 8, *"Construction and Implementation Cost Estimates,"* estimates costs for ditches and culverts of various sizes. In reviewing this document we found that estimates for like sized structures vary considerably. For example, a ditch with a 3 foot base width and 4 feet deep is variously estimated at both $26 per linear foot and $33 per linear foot; ditches with a 3 foot base width, 3 ½ feet deep are estimated at $20 per linear foot, while a smaller ditch with a 3 foot base width, 3 feet deep is estimated at $26 per linear foot; in one case a 30 inch culvert 120 linear feet long is estimated at $52,000 while in another case a 30 inch culvert 120 linear feet long is estimated at $29,000; etc. **Given these disparities, please review these cost estimates to ensure they are uniform and accurate.**

Section 5.2, Cost- Benefit Analysis

As stated in the comments regarding Section 3.3, *"Project Benefits,"* **KTCSD intends to only consider benefits that relate to what was included in the original scope of work and which address the "KTCSD Purposes".**

Consideration of any other benefits aside from those which were part of the mandate voters approved should not be significant considerations when determining which projects are priorities. In addition, potential benefits which may be derived from the proposed ECCHC/EBRPD wetlands project should not be considerations since that project is entirely separate from the proposed KTCSD projects.

Therefore, this section needs to be revised taking these circumstances into consideration. Based upon the District's mandate, projects which provide the most benefit with regard to drainage improvements alone must be the ones of significance.

Section 6, Conclusion

Revisions to this section should be made to reflect revisions made to sections 1 – 5.

We look forward to receiving your responses regarding the questions, comments and concerns delineated above as well as a revised draft final report taking all these matters into account. We are aware that the deadline for application for grant funding is rapidly approaching, so your earliest attention is requested.

Sincerely,

Trish Bello-Kunkel

Trish Bello-Kunkel
Chairperson, KTCSD

Enclosures:

(1) Agreement (including scope of work) between KTCSD and ESA, January 26, 2017;
(2) Map of KTCSD boundaries;
(3) Knightsen Area Drainage Facilities;
(4) Letter from Randolf Sanders, Staff Engineer, Contra Costa Flood Control, to Steve Ohmstede, former Chair, KTCSD, dated April 4, 2017.

Cc: Tim Jensen, Division Manager, Contra Costa County Public Works – Flood Control District

ENCLOSURE 1 Part 1

AGREEMENT FOR SERVICES

This agreement is made this January 26 day of 2017 in the City and County of San Francisco, California, by and between Knightsen Community Services District having a principal place of business at PO Box 763, Knightsen, CA, 94548 (hereinafter "CLIENT"), and Environmental Science Associates (**ESA**) having a principal place of business at 550 Kearny Street, Suite 800, San Francisco, California, 94108.

I. SCOPE OF SERVICES

ESA agrees to render the services in support of CLIENT in the Knightsen Storm Water Resources Plan. Specific scope items are set forth in Exhibit A (hereinafter "Services") attached hereto and made a part hereof by this reference. Unless otherwise modified in writing and signed by both parties, the scope of services to be performed hereunder shall be solely limited to those included in the Services.

II. COMPENSATION

CLIENT agrees to compensate ESA for services performed under this Agreement on a Time-and-Materials basis not to exceed forty-nine thousand and seven hundred dollars ($49,700.00) based on the Budget Estimates attached in Exhibit A. Labor and expenses are to be billed according to the attached Rate Schedules (Exhibit B). Billing rates are subject to an annual adjustment on January 1 of each year.

The total amount of $49,700.00 will not be exceeded except by written amendment to this Agreement.

III. BILLING AND PAYMENT

The CLIENT recognizes that time is of the essence with respect to payment of ESA's invoices and that timely payment is a material part of the consideration of this Agreement.

Invoices will be sent monthly, based on ESA's actual costs incurred. Payment is due and payable upon receipt. If the CLIENT objects to all or any portion of an invoice, the CLIENT shall so notify ESA within ten (10) business days of CLIENT's receipt of invoice, identify the cause of disagreement, and pay when due that portion of the invoice if any, not in dispute.

At the discretion of ESA, non-disputed balances not paid within thirty (30) days of the due date will be subject to a monthly interest charge of 1.5%, not to exceed an annual rate of 18%. These charges are not included in the total contract amount and are considered out-of-scope. Payment thereafter shall first be applied to accrued interest and then to the principal unpaid amount.

Application or non-application of interest charges as a consequence of the CLIENT's late payment does not constitute any willingness on ESA's part to finance the CLIENT's operation, and no such willingness should be inferred. At the discretion of ESA, non-payment of invoices due may result in suspension or termination of this Agreement without waiving any other claim against the CLIENT and without thereby incurring any liability to the CLIENT.

Reasonable costs of collection, including, but not limited to, legal fees, staff time, and other documented expenses will be the responsibility of the CLIENT in the event that work is required to be suspended or

terminated due to nonpayment. These costs are not included in the total contract amount and are considered out-of-scope.

IV. AUTHORIZATION TO PROCEED

ESA agrees to commence performance of the Services promptly upon written authorization from the CLIENT to proceed. The CLIENT's authorization indicates that the CLIENT has reviewed the scope of services and acknowledges that said scope is adequate to meet project needs, based on assumptions made prior to the onset of work.

V. WORK PRODUCTS AND OWNERSHIP OF DOCUMENTS

Reports, recommendations, and other materials resulting from ESA's efforts are intended solely for purposes of this Agreement; any reuse or modification by CLIENT or others for purposes outside this Agreement without ESA's written permission shall be at the user's sole risk. CLIENT will be responsible for furnishing such background reports, data, plans, documents and information detailed in Exhibit A necessary for ESA's proper performance of its services. ESA may rely upon materials provided by CLIENT in performing services under this Agreement, however, ESA assumes no responsibility or liability for their accuracy. If CLIENT-provided materials are not available or of sufficient quality to enable ESA to complete its proposed scope of Services, the CLIENT and ESA mutually agree to renegotiate contract terms or the scope of services to ensure successful completion of the contract.

All CLIENT-provided materials will remain the property of the CLIENT. In addition, copies of all reports, field notes, calculations, estimates and other documents which are prepared as instruments of service shall become CLIENT's property upon final payment for said services. ESA retains all common law, statutory and other reserved rights, including the copyright thereto. Proprietary computer software and its applications, unless expressly developed as a work product for use by the CLIENT as part of the scope of services, remains the property of ESA or the software developer.

The electronic files submitted by ESA to the CLIENT are submitted for an acceptance period of 15 business days. Any defects the CLIENT discovers during this period will be reported to ESA and will be corrected as part of the basic Scope of Services. Correction of defects detected and reported after the acceptance period will be compensated as additional services outside the scope of this Agreement.

Under no circumstances shall transfer of drawings and other instruments of service on electronic media for use by the CLIENT be deemed a sale by ESA and ESA makes no warranties, either express or implied of merchantability and fitness for any particular purpose.

VI. CREDIT/ACKNOWLEDGMENTS

ESA shall be given proper credit and acknowledgment for all services included but not limited to: planning, design and implementation. Proper credit shall be defined as being named by CLIENT or their Agent in such circumstances as project identification boards, published articles or promotional brochures.

VII. INDEMNIFY AND HOLD HARMLESS

Other than in the performance of professional services, ESA agrees to indemnify, defend and save harmless the CLIENT, its officers, agents and directors from any and all claims and losses accruing or resulting to any and all contractors, subcontractors, suppliers, laborers, and any other person, firm or

corporation furnishing or supplying work, services, materials, or supplies in connection with the performance of this Agreement, and from any and all claims and losses accruing or resulting to any person, firm or corporation who may be injured or damaged by ESA in the performance of this Agreement.

In addition to the foregoing, ESA shall indemnify and hold harmless CLIENT, its officers, agents and directors from any and all claims and losses to the extent caused by the negligence or willful misconduct of ESA (or any individual or entity for whom ESA shall bear legal liability for the acts or omissions thereof) in the performance of professional services pursuant to this Agreement.

CLIENT hereby agrees to hold harmless and indemnify ESA from and against any and all liability which arises out of the CLIENT's negligent acts, errors or omissions, whether it be sole or in concert with others, in connection with the performance of the scope of services.

In addition and notwithstanding any other provisions of this Agreement, the CLIENT agrees, to the fullest extent permitted by law, to indemnify and hold harmless ESA, its officers, directors, employees, agents and subconsultants from and against all damage, liability or cost, including reasonable attorney's fees and defense costs, arising in or out of this project or performance under this Agreement, excepting those damages, liabilities or costs attributable to the negligence or willful misconduct of ESA.

VIII. LIMITATION OF LIABILITY

The CLIENT agrees to limit ESA's liability to the CLIENT and to all contractors and subcontractors on the project arising from ESA's negligent acts, errors and omissions such that the total aggregate liability of ESA to all those named shall not exceed the insurance limits required by this agreement. CLIENT agrees that in no instance shall ESA be responsible, in whole or in part, for the negligent errors or omissions of any other party, including subconsultants or contractors.

IX. INSURANCE

With respect to performance of work under this Agreement, ESA shall maintain and shall require of all of its subconsultants and other agents to maintain throughout the term of this Agreement a policy or policies of insurance as described below:

9.1 Workers' Compensation Insurance. Workers' compensation insurance with statutory limits as required by the law.

9.2 Commercial General Liability Insurance. Combined single-limit bodily injury and property damage liability against any liability to the public incident to the services to be performed under this Agreement, or resulting from said services. The policy is to contain "Broad form property damage" and "personal injury endorsement." Such general liability insurance shall be in the amount of not less than $1,000,000 against the claims aggregate to any one occurrence.

9.3 Automobile Liability Insurance. Comprehensive automobile liability covering all motor vehicles, including owned, leased, non-owned, and hired vehicles, used in providing services under this Agreement, with a combined single limit of not less than $500,000 per occurrence.

9.4 Professional Liability Insurance. Professional liability insurance covering errors and omissions of ESA in a sum not less than $1,000,000.

Said policies shall inure to the contingent liability, if any, of CLIENT, its officers, agents, and employees, and shall obligate the insurance carriers to notify CLIENT in writing not less than thirty (30) days prior to cancellation thereof, or any other change affecting the coverage of the policies. Except for professional

liability and workers' compensation insurance, CLIENT shall be named as an additional insured for risks arising out of the performance by ESA of services under this Agreement.

ESA shall furnish to CLIENT a certificate of insurance of each and every such policy within not more than fifteen (15) business days after the effective date of this Agreement.

X. HAZARDOUS MATERIALS, ASBESTOS

ESA is not insured for and does not undertake work involving hazardous materials or asbestos. If these materials are encountered during the performance of this Agreement, CLIENT will allow ESA to halt any work that may be affected by those materials without penalty until the CLIENT retains the services of a certified, insured, experienced contractor to perform removal or other required action.

To the fullest extent permitted by law, CLIENT agrees to defend, indemnify and hold ESA, its agents, subcontractors and employees harmless from and against any and all claims, defense costs, damages and liabilities arising out of or resulting from the performance of this Agreement by ESA involving pollution or asbestos related activities, including the actual, alleged or threatened discharge, dispersal, release or escape of pollutants or asbestos.

XI. RIGHT OF ENTRY AND PROPERTY RESPONSIBILITIES

CLIENT has responsibility for obtaining a right of entry to the property. The right of entry shall allow ESA, its agents, subcontractors, and employees to enter the property from time to time as necessary to perform all acts, studies and research pursuant to the agreed Services. ESA has responsibility for its own activities on the property including the safety of its employees; it does not assume control of nor responsibility for the property nor the safety of persons not in ESA's employ.

XII. DELAYS, SUSPENSION OF WORK

In the event that ESA's work is interrupted due to causes beyond our control or for the CLIENT's convenience for more than 90 days, ESA shall be compensated for costs related to demobilization and subsequent remobilization. The budget for subsequent services to complete the contract shall be readjusted to be based upon ESA's prevailing fee schedule and expense reimbursement policy at the time the work is restarted. Further, any retainage held for Services completed prior to the delay will become due and payable. Neither party will hold the other responsible for damages or delays in performance caused by acts of God or other circumstances beyond the reasonable control of the other party. Delays within the scope of this provision that cumulatively exceed 150 calendar days shall, at the option of either party, make this Agreement subject to renegotiation or termination.

XIII. TERMINATION

ESA or the CLIENT may terminate this Agreement for reasons identified elsewhere in this Agreement or for other reasons which may arise with fifteen (15) business days written notice to the other party. Irrespective of which party shall effect termination, ESA shall within 30 days submit a final invoice for services rendered up to the date of termination, as well as those associated with the termination itself such as demobilizing or non-cancelable expenses. CLIENT will remunerate ESA for all outstanding amounts within 15 business days of receipt of the final invoice.

XIV. DISPUTE RESOLUTION

In an effort to resolve any conflicts that arise during the term of this contract or following completion of this project, the CLIENT and ESA agree that all disputes arising out of or relating to this Agreement shall be submitted to non-binding mediation unless the parties mutually agree otherwise.

XV. ASSIGNMENT

Neither party may assign, sublet, or transfer this Agreement or any interest therein or claim thereunder (including but not limited to monies that are due or may be due) without the prior written approval of the other.

XVI. NOTICES

Any notices or other communications to be given to either party pursuant to this Agreement shall be given by delivering same in writing to the parties at the addresses set forth below:

CLIENT:
Knightsen Community Services District
PO Box 763
Knightsen, CA, 94548
Attention: Steve Ohmstede
Tel: (925) 354-2937 Fax:

ESA:
ESA
550 Kearny Street, Suite 900
San Francisco, CA 94108-2404
Attention: Mark Lindley
Tel: 415 262-2300 Fax: 415 262-2303

XVII. APPLICABLE LAW

This Agreement, its interpretation and performance shall be governed by the laws of the State of California.

XVIII. INTEGRATION

This Agreement constitutes the entire understanding between ESA and the CLIENT concerning the performance of services, and no prior oral or written Agreements or understandings shall have any force and effect with respect to the performance of services. This Agreement may not be modified except in writing, signed by both parties.

XIX. SEVERABILITY

If any part of this Agreement is held invalid for any reason, all other valid terms and conditions remain in effect.

XX. BENEFITS

Except as herein provided, the Agreement shall inure to the benefit of the assigns and successors hereto.

XXI. ATTORNEY FEES

In the event of any litigation from or related to the services provided under this Agreement, each party will bear its own costs. All actions must be taken or filed in the City and County of San Francisco, California, or in the County in which the project is located.

XXII. CONFIDENTIALITY

The CLIENT agrees that the technical methods, techniques and pricing information contained in any proposal submitted by ESA pertaining to this project or in this Agreement or any Addendum thereto, are to be considered confidential and proprietary, and shall not be released or otherwise made available to any third party without the express written consent of ESA.

XXIII. COMPETENT PARTIES

ESA and its CLIENT attest that the representatives whose signatures are presented below are empowered to act on their organizations' behalf.

XXIV. INDEPENDENT CONTRACTOR

The parties agree that ESA is an independent contractor and not an agent or employee of CLIENT. Agents, employees, servants, or representatives of ESA shall not be deemed to be employees, agents or representatives of the CLIENT for any purpose. Employees of ESA are not entitled to any benefits the CLIENT provides for CLIENT employees.

XXV. NON-DISCRIMINATION

ESA agrees that it shall not discriminate against any person on the grounds of race, creed, color, religion, national origin, sex, age, marital status, political belief, or the presence of any sensory, mental, or physical handicap in violation of any applicable federal or state law or regulation. In the event ESA PWA violates this provision, CLIENT may terminate this Agreement immediately and bar ESA from performing any services for CLIENT in the future.

XXVI. ENTIRE AGREEMENT

This instrument and any attachments hereto constitute the entire Agreement between CLIENT and ESA.

IN WITNESS WHEREFOF, this Agreement is executed in duplicate in the City and County of San Francisco, California on the day and year first written above.

For and on behalf of:

Knightsen Community Services District		ESA Taxpayer ID No.: 94-1698350	
By:		By:	
Name	STEVE OHMSTEDE	Name	Robert T Buttulo PE
Title	CHAIRPERSON KTCSD	Title	Vice President
Date	1-26-17	Date	Jan 31 2017

ENCLOSURE 1 Part 2

ESA PWA

550 Kearny Street
Suite 900
San Francisco, CA 94108
415.896.5900 phone
415.896.0332 fax

www.esassoc.com

December 5, 2016
Steve Ohmstede and Kim Carone
Knightsen Community Services District
Knightsen, CA

Subject: Proposal for Knightsen Storm Water Resources Plan

Dear Mr. Ohmstede and Ms. Carone :

ESA is pleased to present this proposal to develop a Storm Water Resources Plan (SWRP) for the Knightsen Community Services District. We are excited to have this opportunity to continue our longstanding relationship with the Knightsen Community to help set the stage for Proposition 1 funding to support the implementation of important storm water quality and drainage projects for the community.

As you know, ESA (formerly Philip Williams & Associates) have been working with the community of Knightsen on stormwater issues for more than a decade. We assessed the feasibility of implementing water quality treatment best management practices ("BMPs") and improving stormwater drainage for the community of Knightsen in 2002. The methods and results of that assessment are documented in a report titled "Knightsen Water Quality Wetland Feasibility Assessment" (PWA 2002). Following the 2002 study, the Knightsen community has established a Community Services District (CSD) to facilitate implementation of water quality and drainage improvements.

ESA has met with the CSD on several occasions to present the approaches developed in our 2002 assessment and to look at changes in the watershed around Brentwood. We accompanied the CSD to a meeting for the Bay Area Integrated Regional Management Plan (IRWMP) to explore funding possibilities for stormwater conveyance and treatment in Knightsen. More recently, we met with the CSD and Contra Costa County Flood Control District in October to discuss developing Storm Water Resources Plan that would support the CSD's application for Proposition 1 grant funding through the State Water Resources Board.

ESA has also been working with the East Contra Costa County Habitat Conservancy to examine the feasibility for restoration and stormwater treatment on the Nunn Property in eastern Knightsen. With the Habitat Conservancy's purchase of the Nunn property, the Knightsen CSD has an opportunity to partner with the Conservancy to implement one or more centralized stormwater improvement BMPs. Property ownership/availability has been a major impediment to obtaining grant funding, and the CSD now has an exciting opportunity to implement the vision to improve stormwater conveyance to help address flooding while providing habitat benefits and stormwater quality improvements.

In 2017, the State Water Resources Control Board plans to solicit grant applications for up to $90 million in grants to fund implementation of stormwater projects including design, permitting , and construction. Communities wishing to apply for an implementation grant are required to develop a SWRP as a prerequisite for obtaining grant funds. A SWRP is a watershed-based master plan that identifies and ranks local stormwater projects with the intent of providing multiple benefits such as flood reduction, stormwater

quality treatment and/or groundwater recharge. These benefits are in line with the options that we have been discussing with the CSD and Contra Costa County Flood Control District over the past year.

ESA proposes to help the CSD prepare to participate in the next Proposition 1 grant funding cycle by preparing an SWRP that describes the stormwater management options and projects that have been identified by the Knightsen CSD. The attached scope of work describes the tasks and estimated budget to complete the SWRP reflecting the strategy that we discussed with the CSD and Flood Control District in October. We look forward to assisting the Knightsen CSD in developing a SWRP and in implementing stormwater improvements in the future. With the recent property purchase and the upcoming grant funding cycle, we are excited by the real possibilities for the CSD to implement meaningful stormwater improvements over the next few years.

Please do not hesitate to contact either of us with any questions or to discuss this proposal further.

Sincerely,

Mark Lindley, P.E.
Senior Engineer

Christie Beeman, P.E.
Hydrology Program Manager

SCOPE OF WORK

To develop a Storm Water Resource Plan (SWRP) for the Knightsen CSD, ESA proposes to:

1) Update portions of our previous assessment to reflect how the new developments in Brentwood affect runoff into Knightsen,
2) Update previous sizing estimates for culverts and drainage ditches in the community (primarily along Delta Road and Byron Highway) to reflect the updated runoff estimates,
3) Develop conceptual level designs for multi-benefit stormwater management projects along the Santa Fe railroad alignment and within the Habitat Conservancy Property,
4) Provide cost estimates for implementation (design, permitting, and construction) of storm drain improvements and stormwater management facilities, and
5) Document the results of Tasks 1-4 in SWRP suitable to support a Proposition 1 Grant Application.

Based on our October 26, 2016 meeting with the CSD and the Contra Costa County Flood Control District, we have developed the following scope of work.

PHASE 1

Task 1 – Watershed Delineation & Runoff Estimates

ESA will update the previous calculations of runoff volumes and peak flows from the Knightsen watershed. We will update the contributing watershed area based on the updated Drainage Area Boundaries provided by the County that reflect the recent developments in Brentwood that drain towards Marsh Creek (reducing runoff to Knightsen). Additionally we will examine and updated land use assumptions based on readily available data from the County and other public sources. We will use the same methods that were applied for the 2002 study to update runoff estimates based on the updated data.

The runoff estimates will provide updated peak flowrates and runoff volumes for each sub-watershed draining to Knightsen for a smaller, frequent Water Quality Event, and larger, extreme storm events (1-year, 10-year, 25-year, 100-year, and 200-year return periods). Runoff estimates will be developed for specific areas within Knightsen where water quality treatment Best Management Practices (BMPs) could be implemented including:

- One or two facilities along the existing Santa Fe Railroad alignment, and
- Two or three entry points within the Habitat Conservancy's property east of Byron Highway.

PHASE 2

Task 2 – Storm Drain Routing and Sizing Recommendations

ESA will update calculations and recommendations related to the existing storm drainage network and modifications required to deliver storm water to the proposed BMPs along the railroad alignment and within the Habitat Conservancy's property. We will verify key assumptions in the field (budget assumes one day of field work). Field verification will consist of visual observation and approximate measurements (e.g. culvert diameters) and is not anticipated to include surveying, soil testing or flow measurements.

We will estimate the capacity of the existing stormdrain network primarily along Byron Highway and Delta Road and provide recommendations to improve storm water conveyance by modifying the existing ditch routing, expanding existing ditches and upgrading existing culverts. Recommendations will include:

- Ditch sizes (width, depth, cross section) for conveyance and a wider option for water quality treatment
- Culvert sizes along Delta Road, Byron Highway, and for culverts across Byron Highway to deliver runoff to the Habitat Conservancy's property

Task 3 – Develop Conceptual BMP Designs

ESA will develop conceptual designs for one or two centralized stormwater treatment facilities proposed along the existing Santa Fe railroad alignment and two facilities located on the Habitat Conservancy Property. The conceptual designs will be specific to each location. The conceptual designs will consist of a narrative description, preliminary calculations for sizing the facility and estimating water quality and flood management benefits, and figures showing a conceptual plan view diagram and cross sections. The narrative will include updated recommendations for improving the storm drainage and water quality.

PHASE 3

Task 4 – Develop Cost Estimates

ESA will develop cost estimates to implement the recommended stormdrainage improvements and stormwater treatment facilities. The cost estimates will include design, permitting, and construction costs for stormdrain improvements and stormwater treatment facilities. In addition, ESA will develop a cost estimate to prepare a Proposition 1 Grant Application to be completed when the next Storm Water Control Board Proposition 1 Grant Solicitation is open (anticipated in Summer 2017).

Task 5 – Report and Meetings

The results of Tasks 1-4 will be summarized in a brief report. The report will be structured so that it may serve as a Stormwater Resource Plan for the Knightsen CSD, and will include project descriptions suitable for inclusion in the Bay Area Integrated Water Management Plan. The report will include a community wide approach to address flood protection and stormwater quality. Potential projects (stormwater drainage improvements and stormwater treatment facilities) will be ranked based on the benefits for stormwater quality and flood reduction. The project description will emphasize the multi-benefit nature of the potential projects including quantification of benefits. The projects with the highest potential benefits (storm drainage improvements and water quality facilities) will be described in greater detail. The report will be provided as a draft for CSD and County comment with one round of revision to finalize the report.

This task also includes coordination with CSD representatives and Contra Costa County Flood Control, including phone and email correspondence and up to four in-person meetings (Kickoff, Phase 1, Phase 2, and Phase 3).

Assistance in preparing the Proposition 1 Grant Application will be covered in a subsequent Task Order.

BUDGET

The attached Table provides ESA's estimated budget for each of the tasks described above. We recommend compensation on a time and materials basis, not to exceed the total estimate budget of $49,700 without prior authorization. Please note that actual distribution of charges may differ from the estimate provided in Table 1. ESA will invoice monthly for actual time and materials according to our standard rate schedule (see attached).

SCHEDULE

ESA will commence work upon notification to proceed. We anticipate that we will complete each Phase of work within about one to two months, with the Final Storm Water Resources Plan completed within about four to six months. We will present the draft study to the CSD (and Flood Control District) and address one round of comments in the final report. Depending upon the level of effort, we anticipate delivering the final report within one to two weeks following receipt of comments.

This schedule will accommodate the next round of grant funding which is expected to be announced in Fall 2017.

ESA Labor Detail and Expense Summary

	Employee Name	Beeman	Lindley	Stoller	Tanaka	Jackson		
	Title	Director II	Managing Associate III	Managing Associate I	Senior Associate I	Associate II	Hours	Labor Price
Task #	**Task Name/Description**	**$215**	**$200**	**$180**	**$150**	**$140**		
1	Watershed Delineation & runoff estimates	1	4	8		32	45	$ 6,935
2	Storm Drain Routing & Sizing Recommendations	1	4	4	16	24	49	$ 7,495
3	Develop Conceptual BMP Designs	1	8	16	24	40	89	$ 13,895
4	Cost Estimates	1	4	4	8	8	25	$ 4,055
5	Report and Meetings	4	40	24	8	16	92	$ 16,620
6	Grant Application (in a subsequent Task Order)						-	$ -
Total Hours		8	60	56	56	120	300	
Subtotals - Labor Costs		$ 1,720	$ 12,000	$ 10,080	$ 8,400	$ 16,800		**$ 49,000**

ESA Labor Costs	**$ 49,000**
ESA Non-Labor Expenses	
Travel for Field Visit & Meetings	$ 500
Report Duplication	$ 200
Subtotal ESA Non-Labor Expenses	**$ 700**

TOTAL PROJECT PRICE **$ 49,700**

ESA

Exhibit B
Environmental Science Associates & Subsidiaries
2016 Schedule of Fees

I. Personnel Category Rates

Charges will be made at the Category hourly rates set forth below for time spent on project management, consultation or meetings related to the project, field work, report preparation and review, travel time, etc. Time spent on projects in litigation, in depositions and providing expert testimony will be charged at the Category rate times 1.5.

Labor Category	Level I	Level II	Level III
Senior Director	250	265	285
Director	200	215	230
Managing Associate	165	180	195
Senior Associate	140	150	160
Associate	100	120	130
Project Technicians	80	95	115

(a) The range of rates shown for each staff category reflects ESA staff qualifications, expertise and experience levels. These rate ranges allow our project managers to assemble the best project teams to meet the unique project requirements and client expectations for each opportunity.

(b) From time to time, ESA retains outside professional and technical labor on a temporary basis to meet peak workload demands. Such contract labor may be charged at regular Employee Category rates.

(c) ESA reserves the right to revise the Personnel Category Rates annually to reflect changes in its operating costs.

II. ESA Expenses

A. Travel Expenses

1. Transportation
   a. Company vehicle – IRS mileage reimbursement rate
   b. Common carrier or car rental – actual multiplied by 1.15

2. Lodging, meals and related travel expenses – direct expenses multiplied by 1.15

B. Communications Fee

In-house costs for phone, e-mail, fax, regular postage, walk-up copier, and records retention – project labor charges multiplied by 3%

C. Printing/Reproduction Rates

Item	Rate/page
8 1/2 x 11 b/w	$0.05
11 x 17 b/w	$0.10
8 1/2 x 11 color	$1.00
11 x 17 color	$2.00
Covers	$0.50
Binding	$1.00
HP Plotter	$25.00
CD	$10.00
Digital Photography	$20.00 (up to 50 images)

D. Equipment Rates

Item	Rate/Day	Rate/Week	Rate/Month
Project Specific Equipment:			
Vehicles – Standard size	$ 40[a]	$ 180	
Vehicles – 4x4 /Truck	85		
Vehicles – ATV	125		
Laptop Computers	50	200	$ 500
LCD Projector	200	600	
Noise Meter	50		
Electrofisher	300	1,200	
Sample Pump	25		
Field Traps	40		
Digital Planimeter	40		
Cameras/Video/Cell Phone	20		200
Miscellaneous Small Equipment	5		
Computer Time (i.e. GIS)	120[b]		
Stilling Well / Coring Pipe (3 inch aluminum)	3/ft		
Backpack Sprayer	25		
Beach Seine	50		
Otter Trawl	100		
Wildlife Acoustics Bat Detector	125	400	
Topographic Survey Equipment:			
Auto Level	40		
Total Station	200	600	
RTK-GPS	300	1,200	
RTK-GPS Smartnet Subscription	50	200	
Trimble GPS	75	350	900
Tablet GPS	100	400	1,000
Laser Level	60		
Garmin GPS or equivalent	25		250

Item	Rate/Day	Rate/Week	Rate/Month
Hydrologic Data Collection, Water Current, Level and Wave Measurement Equipment:			
ISCO 2150 Area Velocity Flow Logger	$ 25	$ 100	$ 400
Logging Rain Gage	10	40	125
Marsh-McBirney Hand-Held Current Meter	50	200	
FloWav Surface Velocity Radar	50	200	
Logging Water Level - Pressure Transducer	10	40	125
Logging Barometric Pressure Logger	10	40	125
Well Probe	20	80	
Bottom-Mounted Tripod / Mooring	25	100	400
Handheld Suspended Sediment Sampler	20		250
Water Quality Equipment:			
Logging Turbidimeter/Water Level Recorder	$ 25	$ 100	$ 400
In-Situ Troll 9500 logging water quality multiprobe		200	800
Logging Temperature Probe	3	10	40
Hach Hand-Held Turbidimeter Recording Conductivity Meter w/Datalogger	50	200	
Refractometer	20	80	
YSI Hand-Held Salinity Meter or pH meter	30	120	
Hand-Held Conductivity/Dissolved Oxygen Probe (YSI 85)	40	160	
Water Quality Sonde			800
YSI 650 with 6920 Multi Probe	180	500	1500
ISCO 6712 Portable Sampler w/ISCO 2105 Module	40	250	900
Sedimentation / Geotechnical Equipment:			
Peat Corer	$ 75	$ 300	
60lb Helly-Smith Bedload Sampler with Bridge Crane	175	700	
Suspended Sediment Sampler with Bridge Crane	75	300	
Vibra-core	100	400	
Shear Strength Vane	50	200	
Auger (brass core @ $ 5/each)	20	80	
Boats:			
14 foot Aluminum Boats with 15 HP Outboard Motor	$ 100	$ 400	
Single or Double Person Canoe	30	120	
17' Boston Whaler w/ 90 HP Outboard	500	2,000	

[a] Actual project charges will be either the IRS mileage reimbursement rate or the daily rate, whichever is higher.

[b] GIS computer time will be charged at $15.00 per hour.

III. Subcontracts

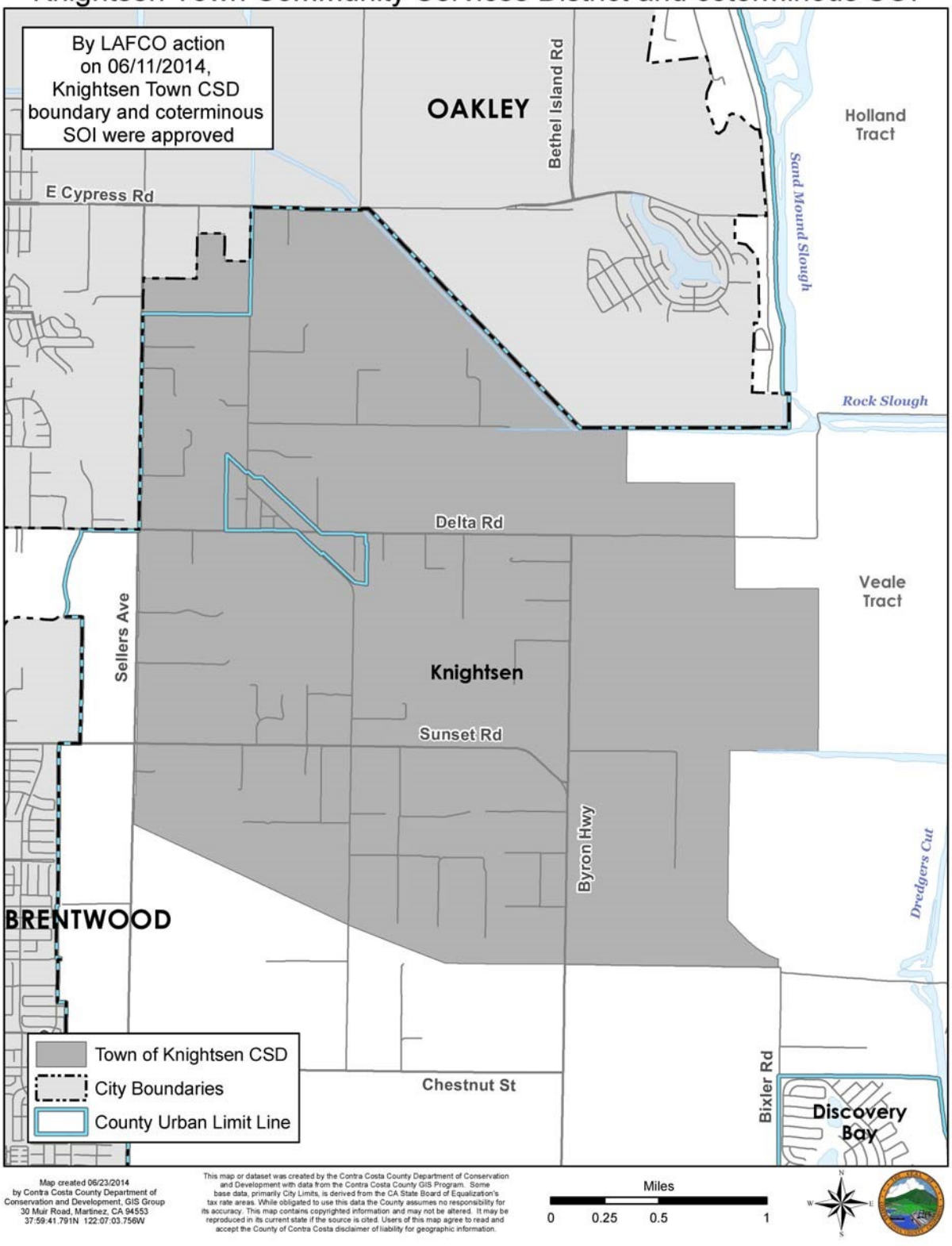
Subcontract services will be invoiced at cost multiplied by 1.15.

IV. Other

There shall be added to all charges set forth above amounts equal to any applicable sales or use taxes legally levied in lieu thereof, now or hereinafter imposed under the authority of a federal, state, or local taxing jurisdiction.

ENCLOSURE 2

Knightsen Town Community Services District and coterminous SOI

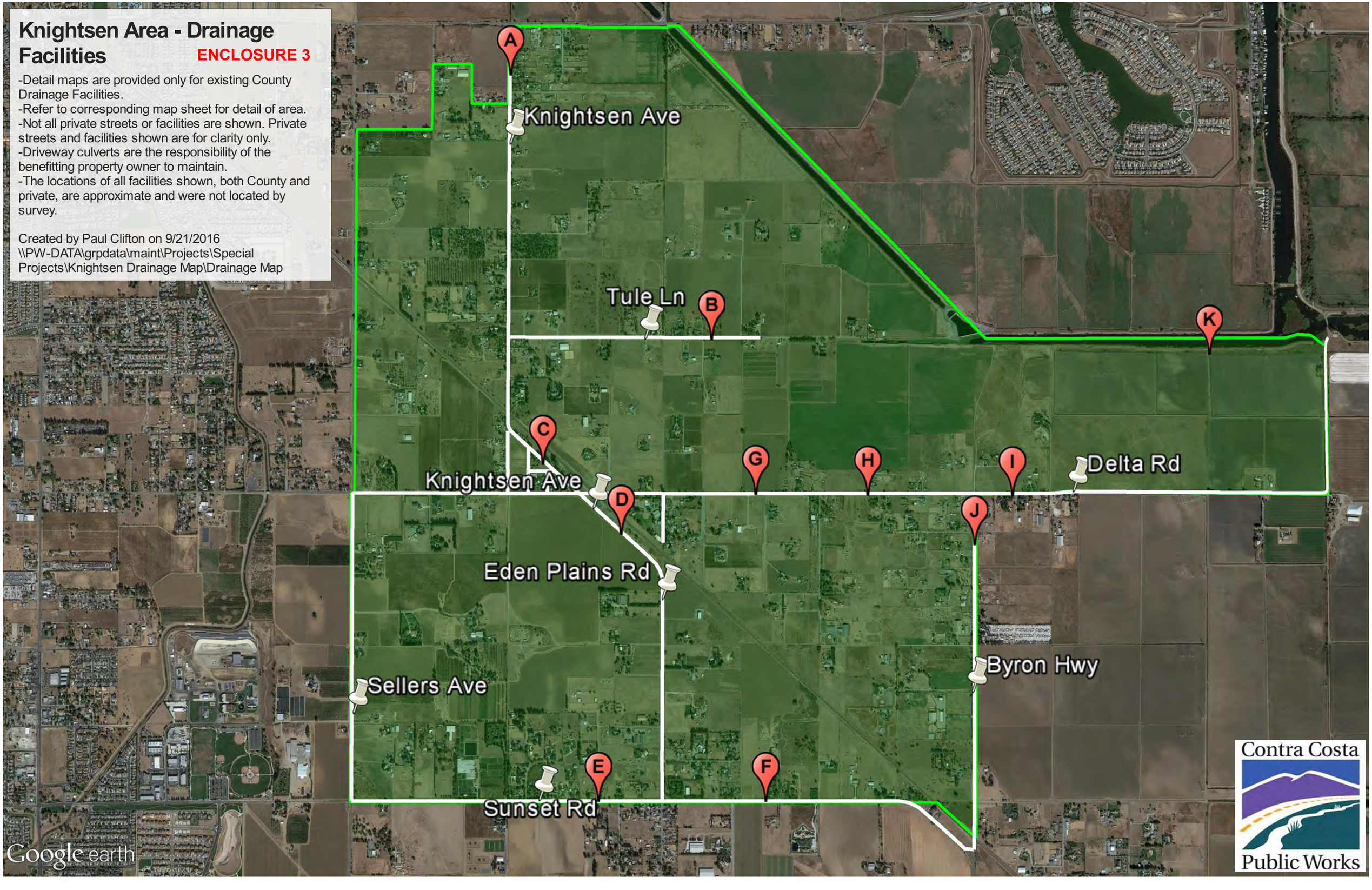


Knightsen Area - Drainage Facilities

ENCLOSURE 3

-Detail maps are provided only for existing County Drainage Facilities.
-Refer to corresponding map sheet for detail of area.
-Not all private streets or facilities are shown. Private streets and facilities shown are for clarity only.
-Driveway culverts are the responsibility of the benefitting property owner to maintain.
-The locations of all facilities shown, both County and private, are approximate and were not located by survey.

Created by Paul Clifton on 9/21/2016
\\PW-DATA\grpdata\maint\Projects\Special Projects\Knightsen Drainage Map\Drainage Map

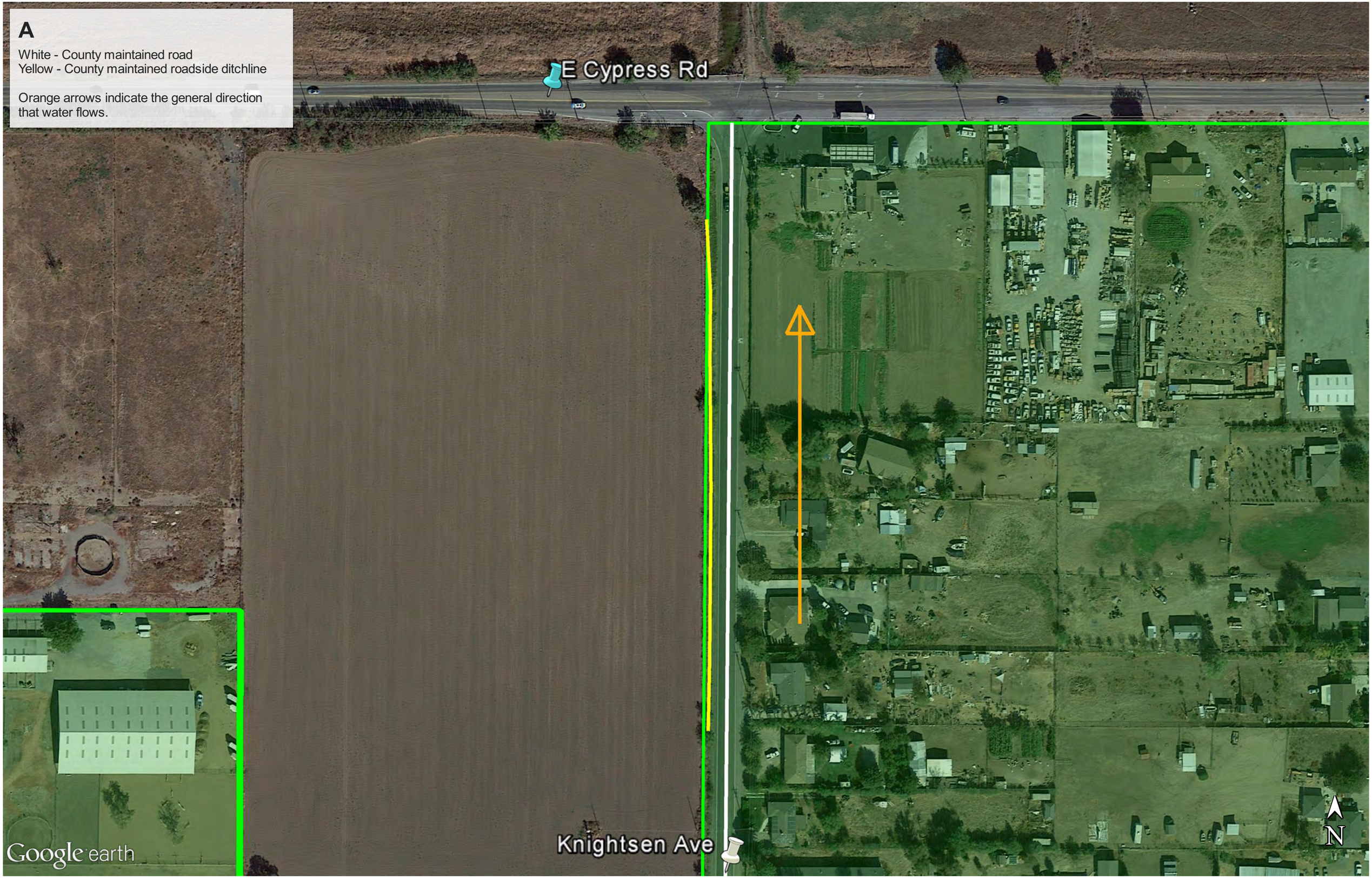


Contra Costa Public Works

A

White - County maintained road
Yellow - County maintained roadside ditchline

Orange arrows indicate the general direction that water flows.



B

White - County maintained road
Yellow - County maintained roadside ditchline

Orange arrows indicate general direction of water flow.

Tule Ln

Google earth

N

C

White - County maintained road
Yellow - County maintained roadside ditchline
Pink – County maintained storm drain pipe or inlet
Cyan - Privately maintained road or drainage facility

Orange arrows indicate general direction of water flow.

Knightsen Ave
Curlew Connex
A St
1st St
2nd St
Delta Rd
14" HDPE
12" RCP
18" CMP
18" CMP
N
Google earth

D

White - County maintained road
Yellow - County maintained roadside ditchline
Pink – County maintained storm drain pipe or inlet
Cyan - Privately maintained road or drainage facility

Orange arrows indicate general direction of water flow.

18" CMP

Delta Rd

Knightsen Ave

Inlet

N. Eden Plains Rd

15" CMP

Eden Plains Rd

N

Google earth

E

White - County maintained road
Pink - County maintained storm drain pipe and inlets
Cyan - Private drainage facility

F

White - County maintained road
Yellow - County maintained roadside ditchline
Pink – County maintained storm drain pipe or inlet
Cyan - Privately maintained road or drainage facility

Orange arrows indicate general direction of water flow.

Sunset Rd

Quail Trail

Google earth

© 2016 Google

N

G

White - County maintained road
Yellow - County maintained roadside ditchline
Pink – County maintained storm drain pipe or inlet
Cyan - Privately maintained road or drainage facility

Orange arrows indicate general direction of water flow.

Bartels D

Delta Rd

Delta Rd

Inlet

Eden Plains Rd

N. Eden Plains Rd

Ohmsteded Rd

Hotchkiss Rd

Pastor Ln

Pastor Ln

N

Google earth

© 2016 Google

H

White - County maintained road
Yellow - County maintained roadside ditchline
Pink - County maintained storm drain pipe and inlets
Cyan - Privately maintained road or drainage facility

Orange arrows indicate the general direction that water flows.

12" CMP

24" CMP

Pastor Ln

Byron Hw

Google earth

N

White - County maintained road
Yellow - County maintained roadside ditchline
Pink - County maintained storm drain pipe and inlets

Orange arrows indicate the general direction that water flows.

24" CMP

Delta Rd

Byron Hwy

Google earth
Image Landsat

N

J

White - County maintained road
Yellow - County maintained roadside ditchline
Pink - County maintained storm drain pipe and inlets
Cyan - Privately maintained road or drainage facility

Orange arrows indicate the general direction that water flows.

24" CMP

Byron Hwy

Pump Station

N

Google earth

K

White - County maintained road
Cyan - Privately maintained road or drainage facility

Sandmound Blvd

Holland Tract Rd

Drainage pump over levee

Delta Rd

Byron Hwy

Google earth
© 2016 Google

N

ENCLOSURE 4

Contra Costa County
Flood Control
& Water Conservation District

Julia R. Bueren,
ex officio Chief Engineer
Steve Kowalewski,
Deputy Chief Engineer

WIDSI

DATE: April 4, 2017

TO: Steve Ohmstede, Chair KCSD

FROM: Randolf Sanders, Staff Engineer

SUBJECT: Knightsen Community Services District Preliminary Review of a Detention Basin Along Knightsen Ave.

Background:

The Knightsen Community Services District (KCSD) asked the Contra Costa County Flood Control and Water Conservation District (District) to investigate the possibility of using a County parcel as a detention basin. The basin would add additional flood protection for the KCSD and its residents. The District researched the parcel for feasibility and created a preliminary design.

Parcel Information:

The District discovered that the parcel in question currently is established for transportation right-of-way (ROW) for Knightsen Avenue. The pavement width of Knightsen Avenue does not meet current width requirements. Karen Laws with the Public Work Department Real Property Division stated that if the parcel were to be deemed surplus then the adjacent property owner, BNSF, would most likely take ownership of the land. If KCSD intends to use a portion of the parcel for the creation of a detention basin they would be required to obtain an easement from the County. This easement would give them the ability to construct a drainage facility for runoff from the site and the adjacent roadway. From the conversation with Karen, it appears that the KCSD would unlikely be able to take ownership of the parcel.

Basin Design:

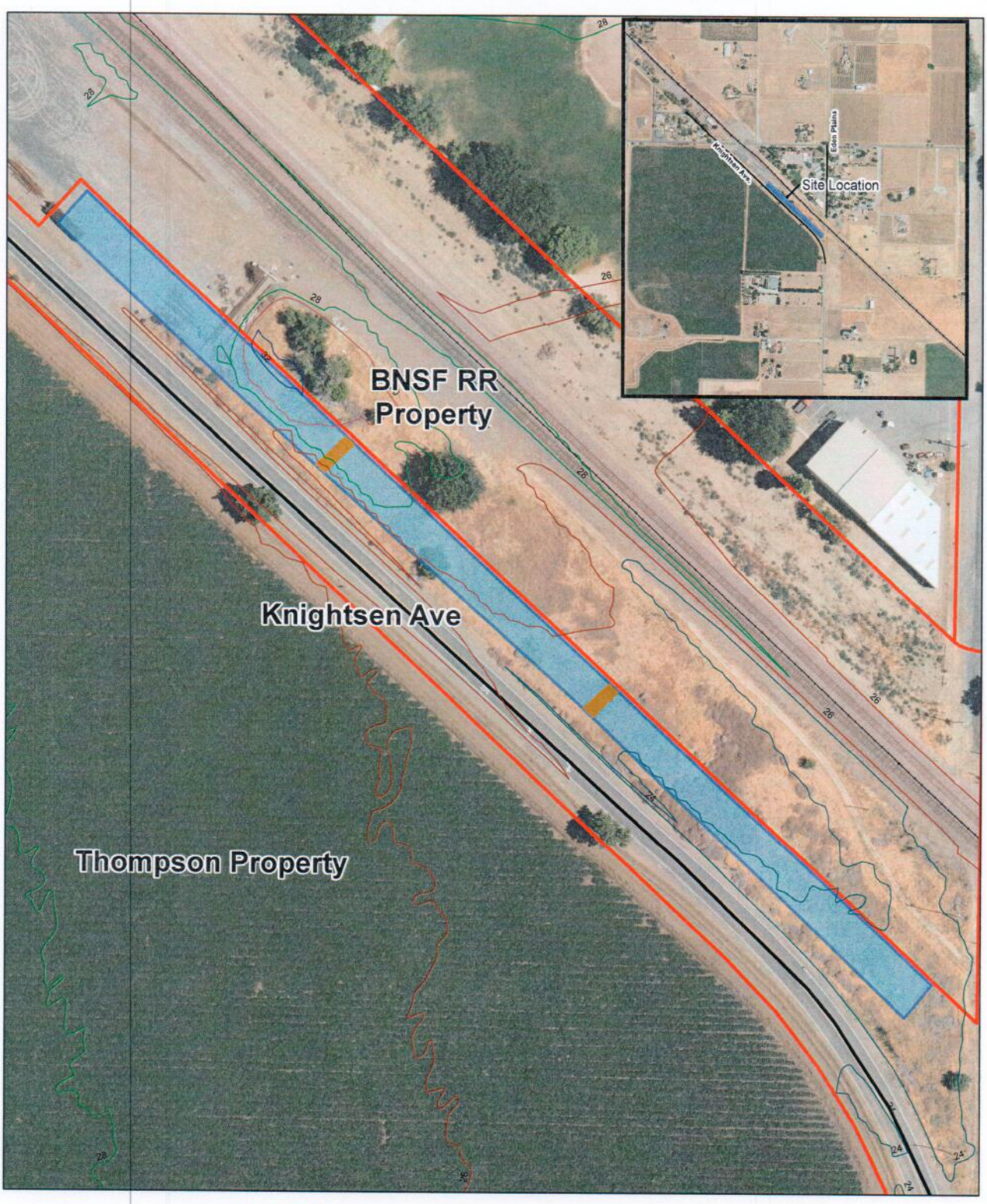
Randolf Sanders created a preliminary design for a detention basin using county parcel data, transportation engineering future ROW information, and geographical information systems (GIS). The assumed width of the basin is 35 feet from top of bank to top of bank, based on the creation of buffers and the remaining area after the future construction of Knightsen Avenue, and 980 feet in length running parallel to Knightsen Avenue within County transportation ROW. The depth of the basin was designed at 3 feet with 3:1 slopes providing a bottom width of 17 feet. The estimated volume of

water that can be obtained by this basin is roughly 75,981 cubic feet which is equivalent to 2,814 cubic yards or 1.74 acre-feet. Based on the basin length, it would be assumed that 2 berms would divide the basin into smaller sections.

Conclusions:

A hydrologic analysis of the surrounding area and the site area was not performed. The basin was designed solely on the parcel data and transportation ROW information to provide a preliminary conceptual design. Infiltration rates and time of concentration were not considered at this time. KCSD would like to use the site for runoff from around the area. According to the County's Real Property Division, the easement wording for flood water detention basin within a transportation ROW might be limited to only flows generated by the adjacent road and the site area. This might prohibit the KCSD from conveying flows generated west of the Delta Road and Knightsen Avenue intersection.

Knightsen Proposed Basin Design



N

- DATA DISCLAIMER -

-USE AT YOUR OWN RISK -

The authorized use of this data is limited to government and educational purposes only, and NOT for operational or commercial purposes. THIS DATA IS PROVIDED "AS IS" AND IN NO EVENT SHALL THE PROVIDERS BE LIABLE FOR ANY DAMAGES, INCLUDING, WITHOUT LIMITATION, DAMAGES RESULTING FROM LOST DATA OR LOST PROFITS OR REVENUE, THE COSTS OF RECOVERING SUCH DATA, THE COSTS OF SUBSTITUTE DATA, CLAIMS BY THIRD PARTIES OR FOR OTHER SIMILAR COSTS, OR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, ARISING OUT OF THE USE OF THE DATA.

The accuracy or reliability of the data is not guaranteed or warranted in any way and the providers disclaim liability of any kind whatsoever, including, without limitation, liability for quality, performance, merchantability and fitness for a particular purpose arising out of the use, or inability to use the data. This data is NOT verified or certified for use in 911 or emergency response where lives, property, or health are at risk.

Contra Costa County and its agencies are and shall remain the sole and exclusive owner of all rights, title and interest in and to all data, libraries, databases, maps, graphics, compilations, files and other data created and posted for inclusion in this system, including ownership of any trade secrets or copyright pertaining thereto, except as specifically noted.

Contra Costa County
Flood Control
& Water Conservation District

0 37.5 75 150 225 300 Feet

Description

- Berm
- Proposed Basin
- Parcels

Contours

- <all other values>

ELEVATION

20 22 24 26 28 30 32 34 36 38 40 42

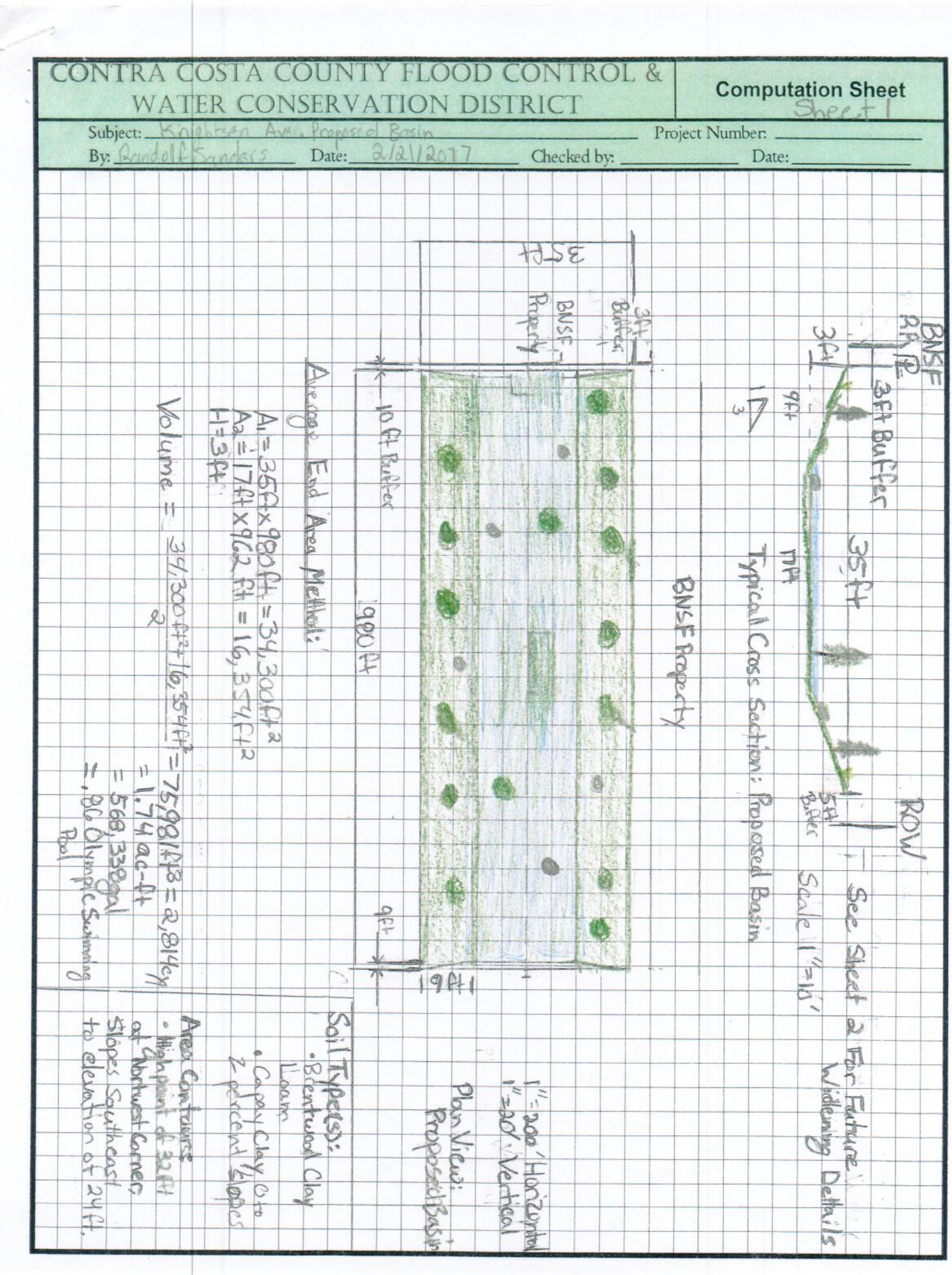
P:\GIS USERS - Projects\FCD-Watershed_Planning\Knightsen_Drainage_Conveyance_Improvements\10-25-18\Knightsen Proposed Basin.mxd

CONTRA COSTA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

Computation Sheet Sheet 1

Subject: Knightsen Ave. Proposed Basin Project Number: _____

By: Randolf Knudsen Date: 2/21/2017 Checked by: _____ Date: _____



Average End Area Method:

$A_1 = 35Ft \times 980Ft = 34,300Ft^2$

$A_2 = 17Ft \times 962Ft = 16,354Ft^2$

$H = 3Ft$

$$\text{Volume} = \frac{34,300Ft^2 + 16,354Ft^2}{2} \times 3Ft = 75,981Ft^3 = 2,814cy$$

$= 1.74 ac\text{-}ft$

$= 568,328 gal$

≈ 1.86 Olympic Swimming Pool

Soil Type(s):
- Brentwood Clay Loam
- Capay Clay 0 to 2 percent Slopes

Area Contours
- Highpoint of 32Ft at Northwest Corner, Slopes Southeast to elevation of 24Ft.

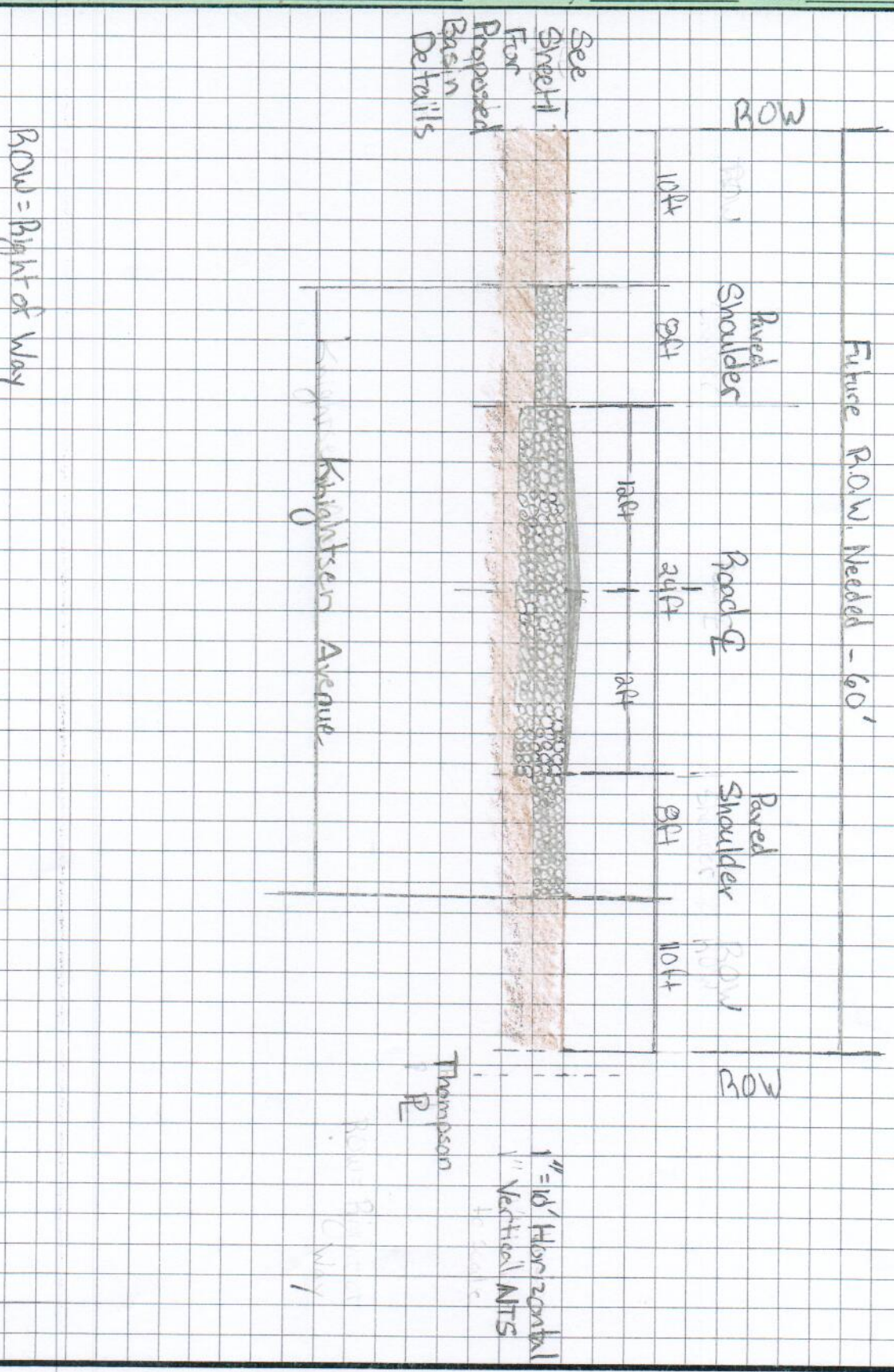
CONTRA COSTA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

Computation Sheet

Sheet 2

Subject: Knightsen Ave. Road Widening — Project Number: _____

By: Randolf Sanders — Date: 2/21/2017 — Checked by: _____ — Date: _____

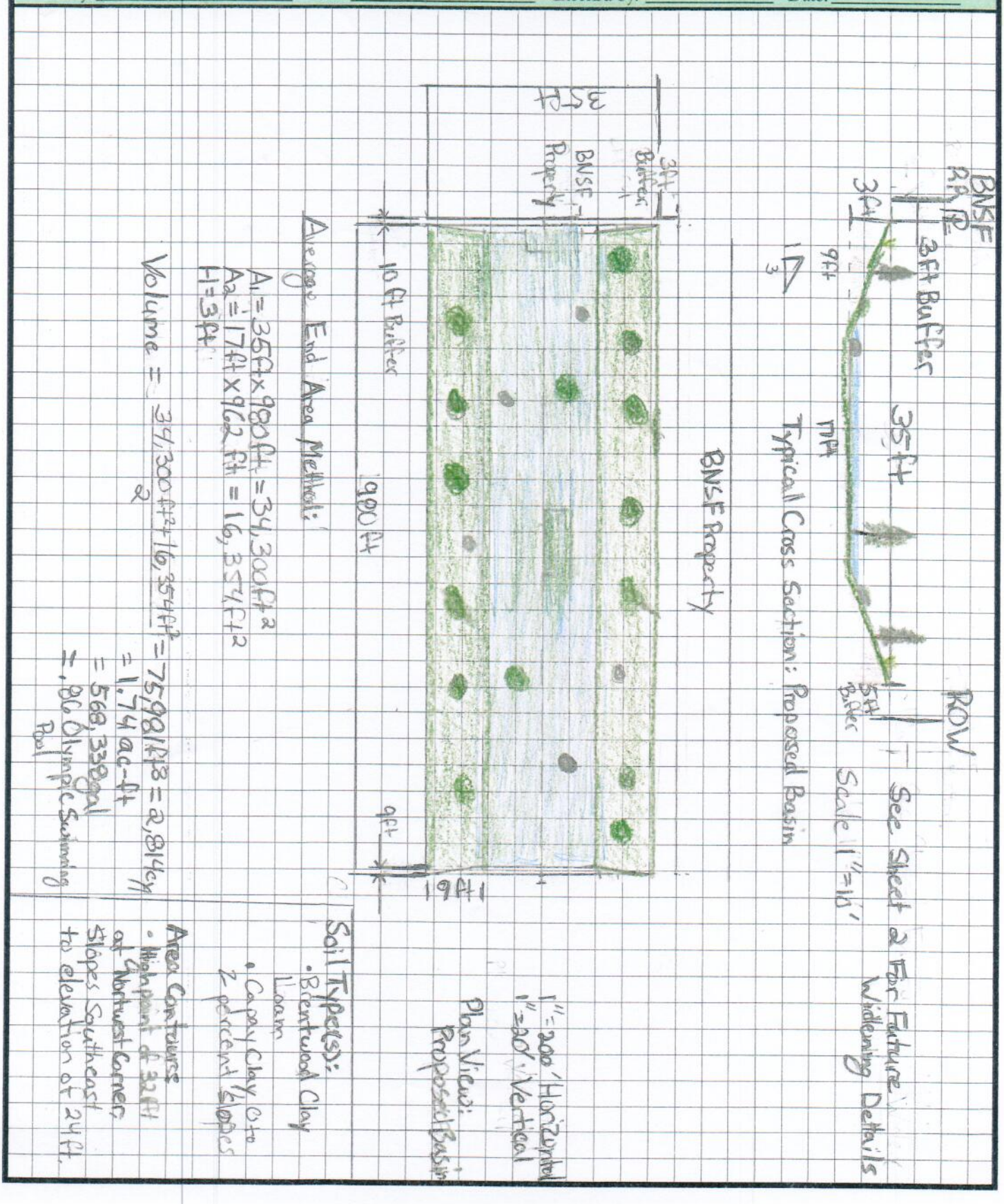


CONTRA COSTA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

Computation Sheet Sheet 1

Subject: Knightsen Ave. Proposed Basin Project Number: _____

By: Randolf Sanders Date: 2/21/2017 Checked by: _____ Date: _____



Average End Area Method:

$A_1 = 350ft \times 98ft = 34,300ft^2$

$A_2 = 17ft \times 962ft = 16,354ft^2$

$H = 3ft$

Volume $= \frac{34,300ft^2 + 16,354ft^2}{2} = 75,981ft^3 = 2,814cy$

$= 1.74 ac\text{-}ft$

$= 568,338gal$

$\approx .86$ Olympic Swimming Pool

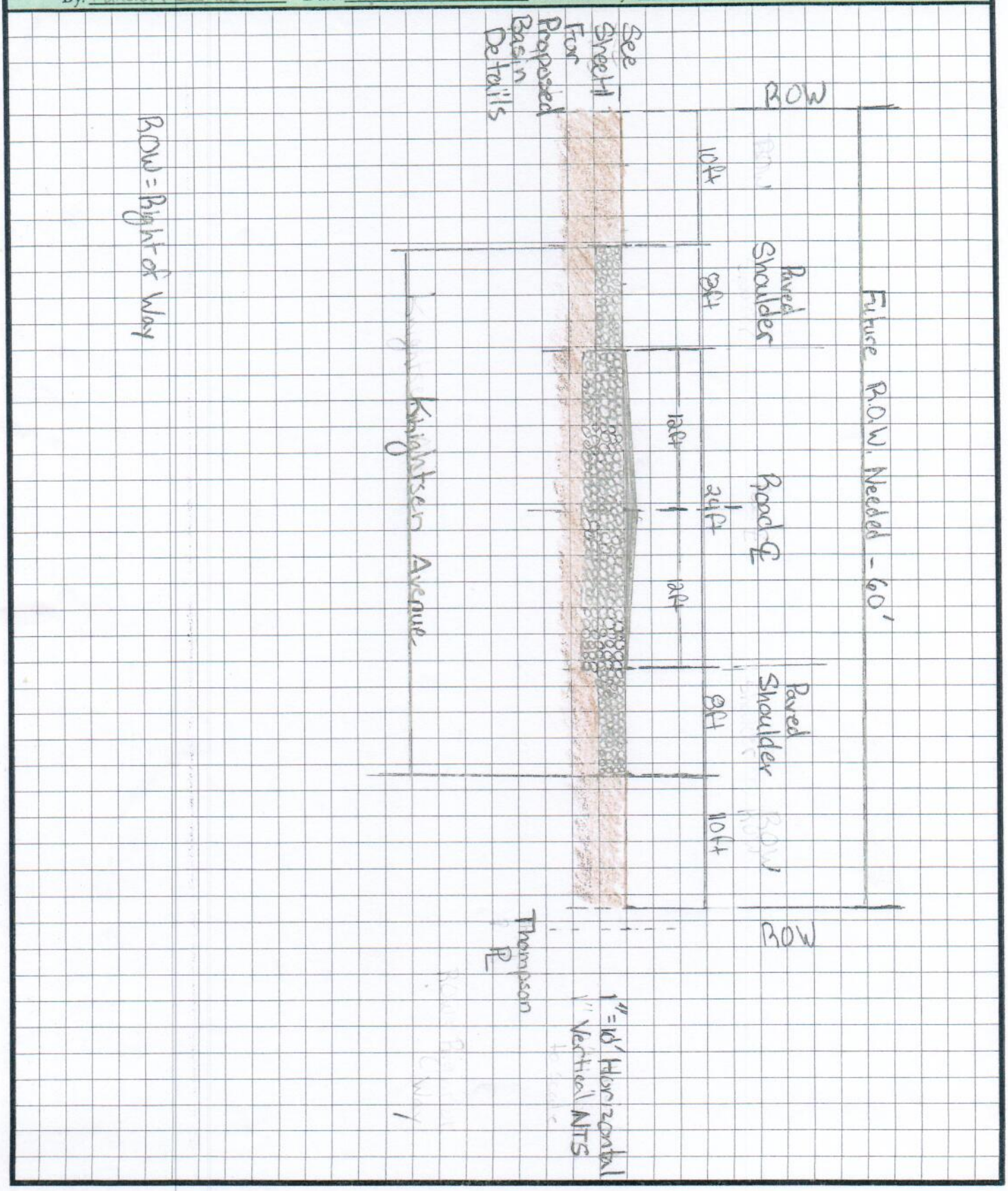
Soil Type(s):
- Brentwood Clay Loam
- Capay Clay 0 to 2 percent Slopes

Area Contours
- Highpoint of 32Ft at Northwest Corner
- Slopes Southeast to elevation of 24Ft.

CONTRA COSTA COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT

Computation Sheet

Sheet 2

Subject: Knightsen Ave. Road Widening Project Number: _____

By: Randolf Sanders Date: 2/21/2017 Checked by: _____ Date: _____