

AGENDA
IRVINE RANCH WATER DISTRICT
ENGINEERING AND OPERATIONS COMMITTEE MEETING
TUESDAY, APRIL 16, 2024

This meeting will be held in-person at the District’s headquarters located at 15600 Sand Canyon Avenue, Irvine, California. The meeting will also be broadcasted via Webex for those wanting to observe the meeting virtually.

To observe this meeting virtually, please join online using the link and information below:

Via Web: <https://irwd.webex.com/irwd/j.php?MTID=m12c2d09f23273d098775fe7f9f18c463>
Meeting Number (Access Code): 2490 411 5984
Meeting password: umNJx8abx23

PLEASE NOTE: Webex observers of the meeting will be placed into the Webex lobby when the Board enters closed session. Participants who remain in the “lobby” will automatically be returned to the open session of the Board once the closed session has concluded. Observers joining the meeting while the Board is in closed session will receive a notice that the meeting has been locked. They will be able to observe the meeting once the closed session has concluded.

CALL TO ORDER 1:30 p.m.

ATTENDANCE Committee Chair: Karen McLaughlin _____
 Committee Member: John Withers _____

ALSO PRESENT Paul Cook _____ Kevin Burton _____ Wendy Chambers _____
 Neveen Adly _____ Paul Weghorst _____ Steve Choi _____
 Jim Colston _____ Jason Manning _____ Jose Zepeda _____
 Rich Mori _____ Eric Akiyoshi _____ Malcolm Cortez _____
 Jacob Moeder _____ Harry Cho _____ Alex Murphy _____
 _____ _____ _____ _____ _____
 _____ _____ _____ _____ _____

PUBLIC COMMENT NOTICE

If you wish to address the Committee on any item, please submit a request to speak via the “chat” feature available when joining the meeting virtually. Remarks are limited to three minutes per speaker on each subject. Public comments are limited to three minutes per speaker on each subject. You may also submit a public comment in advance of the meeting by emailing comments@irwd.com before 9:00 a.m. on Tuesday, April 16, 2024.

COMMUNICATIONS

1. Notes: Burton
2. Public Comments
3. Determine the need to discuss and/or take action on item(s) introduced that came to the attention of the District subsequent to the agenda being posted and determine which items may be approved without discussion.

ACTION

4. PLANNING AREA 51 HERITAGE FIELDS CAPITAL FACILITIES – LEW / RIOS / AKIYOSHI / BURTON

Recommendation: That the Board authorize the General Manager to accept Heritage Fields’ construction contract with L&S Construction, Inc. in the amount of \$619,993.64 for the Planning Area 51 District 2 Whatney Capital Sanitary Sewer Improvements, Project 12823; and authorize the addition of Project 12823 in the amount of \$875,000 to the FY 2023-24 Capital Budget for the Planning Area 51 District 2 Whatney Capital Sanitary Sewer Improvements.

5. DISTRICT-WIDE EMERGENCY GENERATOR DIESEL FUEL STORAGE PROJECT VARIANCE – DRAKE / MOEDER / BURTON

Recommendation: That the Board authorize the General Manager to execute Variance No. 3 in the amount of \$232,970 with Psomas for additional engineering design and construction phase services for the District-Wide Emergency Generator Diesel Fuel Storage, Projects 11536 and 11357.

6. GEOGRAPHIC INFORMATION SYSTEM UTILITY NETWORK MIGRATION CONSULTANT SELECTION – ROBINSON / SHIH / AKIYOSHI / BURTON

Recommendation: That the Board authorize the General Manager to execute a Professional Services Agreement with DCSE in the amount of \$599,130 for the Utility Network Migration, Project 11782.

OTHER BUSINESS

7. Directors’ Comments
8. Adjournment

Availability of agenda materials: Agenda exhibits and other writings that are disclosable public records distributed to all or a majority of the members of the above-named Committee in connection with a matter subject to discussion or consideration at an open meeting of the Committee are available for public inspection in the District’s office, 15600 Sand Canyon Avenue, Irvine, California (“District Office”). If such writings are distributed to members of the Committee less than 72 hours prior to the meeting, they will be available from the District Secretary of the District Office at the same time as they are distributed to Committee Members, except that if such writings are distributed one hour prior to, or during, the meeting, they will be available electronically via the Webex meeting noted. Upon request, the District will provide for written agenda materials in appropriate alternative formats, and reasonable disability-related modification or accommodation to enable individuals with disabilities to participate in and provide comments at public meetings. Please submit a request, including your name, phone number and/or email address, and a description of the modification, accommodation, or alternative format requested at least two days before the meeting. Requests should be emailed to comments@irwd.com. Requests made by mail must be received at least two days before the meeting. Requests will be granted whenever possible and resolved in favor of accessibility.

April 16, 2024

Prepared by: K. Lew / B. Rios / E. Akiyoshi

Submitted by: K. Burton

Approved by: Paul A. Cook



ENGINEERING AND OPERATIONS COMMITTEE

PLANNING AREA 51 HERITAGE FIELDS CAPITAL FACILITIES

SUMMARY:

Heritage Fields, LLC is proceeding with development of Planning Area 51 (Great Park), which includes the construction of streets, storm drains, domestic water, sanitary sewer, and recycled water improvements. As part of the development, Heritage Fields will construct IRWD capital facilities under an existing Supplemental Reimbursement Agreement (SRA). Staff recommends that the Board:

- Authorize the General Manager to accept Heritage Fields' construction contract with FYDAQ Company, Inc. in the amount of \$619,993.64 for the Planning Area 51 District 2 Whatney Capital Sanitary Sewer Improvements project; and
- Authorize the addition of Planning Area 51 District 2 Whatney Capital Sanitary Sewer Improvements, Project 12823 in the amount of \$875,000 to the FY 2023-24 Capital Budget.

BACKGROUND:

Heritage Fields is moving forward with the Planning Area 51 District 2 commercial development. As shown in Exhibit "A", the triangular development site is bordered by Bake Parkway to the north, the I-5 Freeway to the west, and the existing Irvine Auto Center and other commercial lots to the east. Heritage Fields is constructing storm drain improvements for the site and will need to relocate IRWD's 18-inch sanitary sewer. IRWD and Heritage Fields worked together to upsize the existing sewer line to 24 inches, providing greater operational flexibility. IRWD will fund the costs related to the upsizing. Staff negotiated the upsize costs based on recent construction bids for 18-inch sewer construction in the Great Park area. The required IRWD capital facilities are documented in the September 2016 Planning Area 51 Sub-Area Master Plan Update and all subsequent addendums and updates prepared by Stantec.

The design and construction of the IRWD facilities will be performed under the terms of the Master Reimbursement Agreement approved by the Board in August 2012 and as further refined in the SRA dated November 25, 2019.

Whatney Sanitary Sewer Improvements:

The Whatney Capital Sanitary Sewer Improvements consist of installing approximately 800 feet of 24-inch diameter sanitary sewer pipeline. Heritage Fields retained Hunsaker and Associates and Proactive Engineering to prepare the design plans and received bids from four contractors. Based on IRWD paying for the upsize from 18 to 24 inches, as compared to recent construction in the area, IRWD will pay for 54.5% of the total construction. The cost increase for the upsized pipeline is attributable to higher materials costs, larger manholes, and a larger steel casing pipe.

Heritage Fields recommends awarding the construction contract to the lowest bidder, L&S Construction Inc., for a bid amount of \$619,993.64 as shown in Exhibit “B”. In addition, Heritage Fields has received consultant proposals for geotechnical observation and testing, surveying, construction support services, and field archeological and paleontological monitoring. Staff has reviewed the consultant proposals and the construction bids and find the amounts to be acceptable. A summary of the Whatney Sanitary Sewer Improvements costs are shown below:

Design (Hunsaker)	\$1,744.68
Design (Proactive)	\$18,809.79
Construction (L&S)	\$619,993.64
Geotechnical Services (Engeo)	\$12,049.17
Surveying (Hunsaker)	\$29,059.77
Construction Engineering (Proactive)	\$5,332.17
Archeo/Paleo Monitoring	\$4,361.69
Heritage Fields Administration Fee (1%)	<u>\$6,199.94</u>
	\$697,550.85

FISCAL IMPACTS:

Staff requests the addition of Project 12823 to the FY 2023-24 Capital Budget as follows:

Project No.	Current Budget	Addition <Reduction>	Total Budget
12823	\$0	\$875,000	\$875,000

ENVIRONMENTAL COMPLIANCE:

Construction of capital sanitary sewer facilities for the Great Park Development is subject to CEQA. In conformance with the California Code of Regulations Title 14, Chapter 3, Article 7 an Environmental Impact Report was certified by the City of Irvine, the lead agency on April 4, 2012 (SCH# 2002101020).

RECOMMENDATION:

That the Board authorize the General Manager to accept Heritage Fields’ construction contract with L&S Construction, Inc. in the amount of \$619,993.64 for the Planning Area 51 District 2 Whatney Capital Sanitary Sewer Improvements, Project 12823; and authorize the addition of Project 12823 in the amount of \$875,000 to the FY 2023-24 Capital Budget for the Planning Area 51 District 2 Whatney Capital Sanitary Sewer Improvements.

LIST OF EXHIBITS:

Exhibit “A” – Location Map

Exhibit “B” – Bid Summary, Whatney Capital Sanitary Sewer Improvements

Exhibit "A"

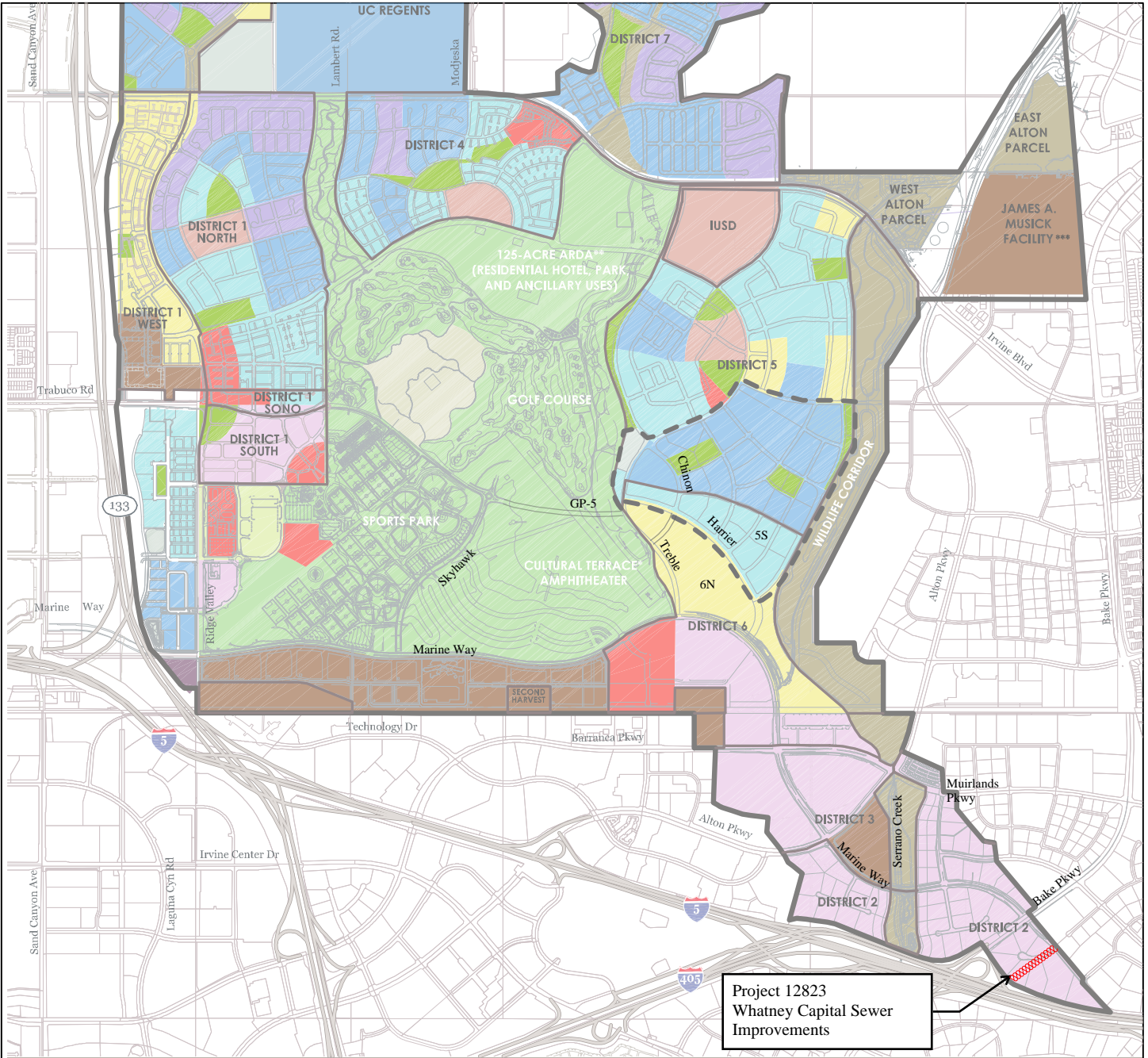


EXHIBIT A

LOCATION MAP

not to scale

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Exhibit "B"

PROJECT: Whatney Sewer Capital and Non-Capital IRWD Code 8001

OWNER: Heritage Fields El Toro, LLC

CAP BID SPREAD

Engineer's Estimate

L&S - LOW

Fydaq

Leatherwood

KEC

CAPITAL - D2 WHATNEY SEWER IRWD - CODE 8001

Capital - Whatney Sewer, IRWD Code 8001

A Capital - Whatney Sewer, IRWD Code 8001		
A.1 SUB-TOTAL, SUBSECTION A.1 - IRWD Capital General Items	\$ 40,000.00	\$ 25,600.00
A.2 SUB-TOTAL, SUBSECTION A.2 - Whatney Sewer - Capital	\$ 1,324,370.00	\$ 1,111,562.00
A.3 SUB-TOTAL, SUBSECTION A.3 - Additional Capital Construction Items on Plans not Identified in the Bid CPS (List Items)	\$ -	\$ -
TOTAL Capital - Whatney Sewer, IRWD Code 8001 CONTRACT PRICE SCHEDULE	\$1,364,370.00	\$1,137,162.00
IRWD CAPITAL GRAND TOTAL - CONTRACT PRICE SCHEDULE	\$1,364,370.00	\$1,137,162.00

\$ 40,000.00	\$ 25,600.00	\$ 32,253.17	\$ 58,500.00
\$ 1,324,370.00	\$ 1,111,562.00	\$ 1,188,372.50	\$ 1,526,100.00
\$ -	\$ -	\$ -	\$ -
\$1,364,370.00	\$1,137,162.00	\$1,220,625.67	\$1,584,600.00
\$1,364,370.00	\$1,137,162.00	\$1,220,625.67	\$1,584,600.00

CAPITAL IMPROVEMENTS - Whatney Sewer

Whatney Sewer - Capital

NO.	CODE	IRWD Capital General Items	QTY	UNIT	UNIT PRICE	AMOUNT
001	126-01	Mobilization, (Not to Exceed 2% of Section A)	1	LS	\$ 10,000.00	\$ 10,000.00
002	126-01	Develop Construction Water Supply & Storage	1	LS	\$ 2,500.00	\$ 2,500.00
003	126-01	Performance, Labor and Payment Bond	1	LS	\$ 20,000.00	\$ 20,000.00
004	126-01	SWPPP & BMP's (Interim Erosion Control)	1	LS	\$ 5,000.00	\$ 5,000.00
005	126-01	Traffic Control	1	LS	\$ 2,500.00	\$ 2,500.00
A.1		SUB-TOTAL, SUBSECTION A.1 - IRWD Capital General Items				\$ 40,000.00

UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT
\$ 7,500.00	\$ 7,500.00	\$ 15,260.00	\$ 15,260.00	\$ 30,000.00	\$ 30,000.00	\$ 22,000.00	\$ 22,000.00
\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 1,000.00	\$ 5,000.00	\$ 5,000.00	\$ 5,575.00	\$ 5,575.00
\$ 14,900.00	\$ 14,900.00	\$ 13,493.17	\$ 13,493.17	\$ 20,000.00	\$ 20,000.00	\$ 13,500.00	\$ 13,500.00
\$ 1,200.00	\$ 1,200.00	\$ 1,000.00	\$ 1,000.00	\$ 2,500.00	\$ 2,500.00	\$ 15,000.00	\$ 15,000.00
\$ 1,000.00	\$ 1,000.00	\$ 1,500.00	\$ 1,500.00	\$ 1,000.00	\$ 1,000.00	\$ 5,000.00	\$ 5,000.00
\$ 25,600.00	\$ 25,600.00	\$ 32,253.17	\$ 32,253.17	\$ 58,500.00	\$ 58,500.00	\$ 61,075.00	\$ 61,075.00

NO.	CODE	Whatney Sewer - Capital	QUAN	UNIT	UNIT PRICE	AMOUNT
006	130-05	Furnish and install 24" PVC Green C900 (DR14) sewer main with sewer indicator tape per IRWD std. dwg. S-6 and specifications, pressure test and acceptance, complete.	208	LF	600.00	\$ 124,800.00
007	130-05	Furnish and install 24" PVC Green C900 (DR14) sewer main within steel casing including spacers, pressure test and acceptance, complete.	586	LF	600.00	\$ 351,600.00
008	130-05	Furnish and install 42" steel casing with minimum wall thickness of 1/2" per IRWD std. dwg. S-7 including bedding, end seals, complete	586	LF	700.00	\$ 410,200.00
009	130-05	Construct 60" diameter manhole per IRWD std. dwg. S-1 with 30" diameter manhole frame and cover, complete.	4	EA	20,000.00	\$ 80,000.00
010	130-05	Construct 60" diameter manhole per IRWD std. dwg. S-1 with 30" diameter manhole frame and cover, reinforcement per detail on plans, complete.	1	EA	25,000.00	\$ 25,000.00
011	130-05	Rechannel existing manhole per detail on the plans, and join existing sewer, complete	1	EA	5,000.00	\$ 5,000.00
012	130-05	Join existing sewer at manhole	1	EA	5,000.00	\$ 5,000.00
013	130-05	Furnish and install casing test stations per IRWD std. dwg. CP-3 including meter box, wire anodes, connection to casing, complete	6	EA	4,000.00	\$ 24,000.00
014	130-05	Remove and dispose of 18" VCP sewer pipe including, trenching, back filling, disposal of pipe off site, complete	706	LF	120.00	\$ 84,720.00
015	130-05	Remove and dispose of 15" VCP sewer pipe including, trenching, back filling, disposal of pipe off site, complete	115	LF	100.00	\$ 11,500.00
016	130-05	Remove and Dispose of Existing sewer manhole and base including demolition of concrete to 2' minus, haul and place into CFD stockpile (within 5 miles of project site) for crushing, manhole cover and frame to be disposed of off site, complete	2	EA	10,000.00	\$ 20,000.00
017	130-05	Construct all weather access road per details on plans, CMB per CFD stockpile (within 5 miles of project site), compacted CMB, compacted subgrade per soils engineer, complete (deletable)	24,340	SF	7.50	\$ 182,550.00
A.2		SUB-TOTAL, SUBSECTION A.2 - Whatney Sewer - Capital				\$ 1,324,370.00

UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT	UNIT PRICE	AMOUNT
590.00	\$ 122,720.00	289.00	\$ 60,112.00	600.00	\$ 124,800.00	750.00	\$ 156,000.00
500.00	\$ 293,000.00	559.00	\$ 327,574.00	600.00	\$ 351,600.00	570.00	\$ 334,020.00
640.00	\$ 375,040.00	667.25	\$ 391,008.50	950.00	\$ 556,700.00	600.00	\$ 351,600.00
18,000.00	\$ 72,000.00	15,225.00	\$ 60,900.00	20,000.00	\$ 80,000.00	28,500.00	\$ 114,000.00
21,500.00	\$ 21,500.00	22,000.00	\$ 22,000.00	25,000.00	\$ 25,000.00	34,150.00	\$ 34,150.00
14,500.00	\$ 14,500.00	2,388.00	\$ 2,388.00	2,500.00	\$ 2,500.00	7,500.00	\$ 7,500.00
17,000.00	\$ 17,000.00	3,500.00	\$ 3,500.00	10,000.00	\$ 10,000.00	4,750.00	\$ 4,750.00
3,800.00	\$ 22,800.00	4,100.00	\$ 24,600.00	2,500.00	\$ 15,000.00	3,500.00	\$ 21,000.00
77.00	\$ 54,362.00	175.00	\$ 123,550.00	100.00	\$ 70,600.00	91.00	\$ 64,246.00
72.00	\$ 8,280.00	175.00	\$ 20,125.00	100.00	\$ 11,500.00	133.00	\$ 15,295.00
6,500.00	\$ 13,000.00	18,500.00	\$ 37,000.00	17,500.00	\$ 35,000.00	7,500.00	\$ 15,000.00
4.00	\$ 97,360.00	4.75	\$ 115,615.00	10.00	\$ 243,400.00	6.00	\$ 146,040.00
\$ 1,111,562.00	\$ 1,111,562.00	\$ 1,188,372.50	\$ 1,188,372.50	\$ 1,526,100.00	\$ 1,526,100.00	\$ 1,263,601.00	\$ 1,263,601.00

NO.	CODE	Additional Capital Construction Items on Plans not Identified in the Bid CPS (List Items)				\$
018						-
019						-
020						-
021						-
022						-
A.3		SUB-TOTAL, SUBSECTION A.3 - Additional Capital Construction Items on Plans not Identified in the Bid CPS (List Items)				\$ -

\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -
\$ -	\$ -	\$ -	\$ -

A	TOTAL WHATNEY SEWER - CAPITAL	\$1,364,370.00
	TOTAL WHATNEY SEWER - IRWD FUNDED PORTION (36.36%)	\$413,472.10

\$1,137,162.00	\$1,220,625.67	\$1,584,600.00	\$1,324,676.00
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April 16, 2024
 Prepared by: D. Drake / J. Moeder
 Submitted by: K. Burton
 Approved by: Paul A. Cook *PA*

ENGINEERING AND OPERATIONS COMMITTEE

DISTRICT-WIDE EMERGENCY GENERATOR
 DIESEL FUEL STORAGE PROJECT VARIANCE

SUMMARY:

The District-Wide Emergency Generator Diesel Fuel Storage project will increase the diesel fuel storage at emergency generators serving four domestic water pump stations and five sewage lift stations to provide 72 hours of operation. The existing emergency generators at two of these domestic water pump stations and five sewage lift stations will be replaced with new generators to accommodate 72 hours of diesel fuel storage. Staff recommends the Board authorize the General Manager to execute Variance No. 3 in the amount of \$232,970 with Psomas to provide additional design services and construction phase services for the District-Wide Emergency Generator Diesel Fuel Storage Project.

BACKGROUND:

IRWD operates many of its facilities with emergency generators located on-site to provide electric power in the event of a power outage. These generators generally have enough fuel to power each facility for 24 hours. Originally, 18 domestic water pump stations and sewage lift stations were included in the scope of work. Psomas and staff completed a comprehensive evaluation of the generator sites and determined that five of the sites should remain as-is and be removed from the project due to the minimal benefit for additional incremental fuel storage compared to the overall cost of the improvements. Four additional sites were removed from this project as they will be completed under separate projects due to other planned construction at the sites or due to the complexity of the improvements. The four removed sites are Santiago Hills Zone 5-8 Pump Station, Baker Water Treatment Plant, Michelson Water Recycling Plant/Operations Center, and Zone A to Rattlesnake Reservoir Pump Station.

A total of nine sites are included in this project, including four domestic water pump stations and five sewer lift stations. The project locations and description of generator and storage improvements are described in the below table.

Replace Generator and Add Fuel Storage	Add Fuel Storage Only for Existing Generators
1. Cabinland Pump Station	1. Lake Forest Zone 5-6 West (2-3 West) Pump Station
2. Foothill Zone 4-6 Pump Station	2. Portola Zone 8-9 Pump Station
3. Cañada Lift Station	
4. Coastal Ridge Lift Station	
5. Coyote Canyon Lift Station	
6. Newport Coast Lift Station	
7. University Lift Station	

A location map of the nine project sites is shown in Exhibit “A”.

Variance No. 3:

Psomas submitted Variance No. 3 that includes additional tasks that were required to complete the design and construction phase services. The additional design phase tasks mainly include additional effort to procure the Orange County Fire Authority and City of Newport Beach Fire Department permits, support with pre-procuring the generators, and replacing the belly tank on the generator at Portola Zone 6-8 Pump Station to eliminate the need for mechanical pumps that would transfer fuel from an auxiliary tank to the main tank. The construction phase services, which is the majority of the variance request, includes meetings, review of submittals and requests for information, plan revisions, and record drawings.

The total cost of Variance No. 3 is \$232,970 and is shown in Exhibit “B”. Staff negotiated the final variance amount with Psomas and believes the variance is reasonable for the additional requested work and construction phases services.

FISCAL IMPACTS:

The District-Wide Emergency Generator Diesel Fuel Storage Projects 11536 and 11537 are included in the Fiscal Year 2023-24 Capital Budget. Sufficient funds exist to complete this phase of work.

ENVIRONMENTAL COMPLIANCE:

The effects of the proposed project are Categorically Exempt from the requirements to prepare additional environmental documentation per California Environmental Quality Act (CEQA) Guidelines, Section 15301, Class 1 (Existing Facilities) and CEQA Guidelines, Section 15302, Class 2 (Replacement or Reconstruction). The Class 1 Exemption provides for the operation, repair, maintenance, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of use beyond that existing at the time of the lead agency's determination. The Class 2 Exemption provides for replacement of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose. A Notice of Exemption was previously filed with the Orange County Clerk Recorder on December 6, 2022.

RECOMMENDATION:

That the Board authorize the General Manager to execute Variance No. 3 in the amount of \$232,970 with Psomas for additional engineering design and construction phase services for the District-Wide Emergency Generator Diesel Fuel Storage, Projects 11536 and 11537.

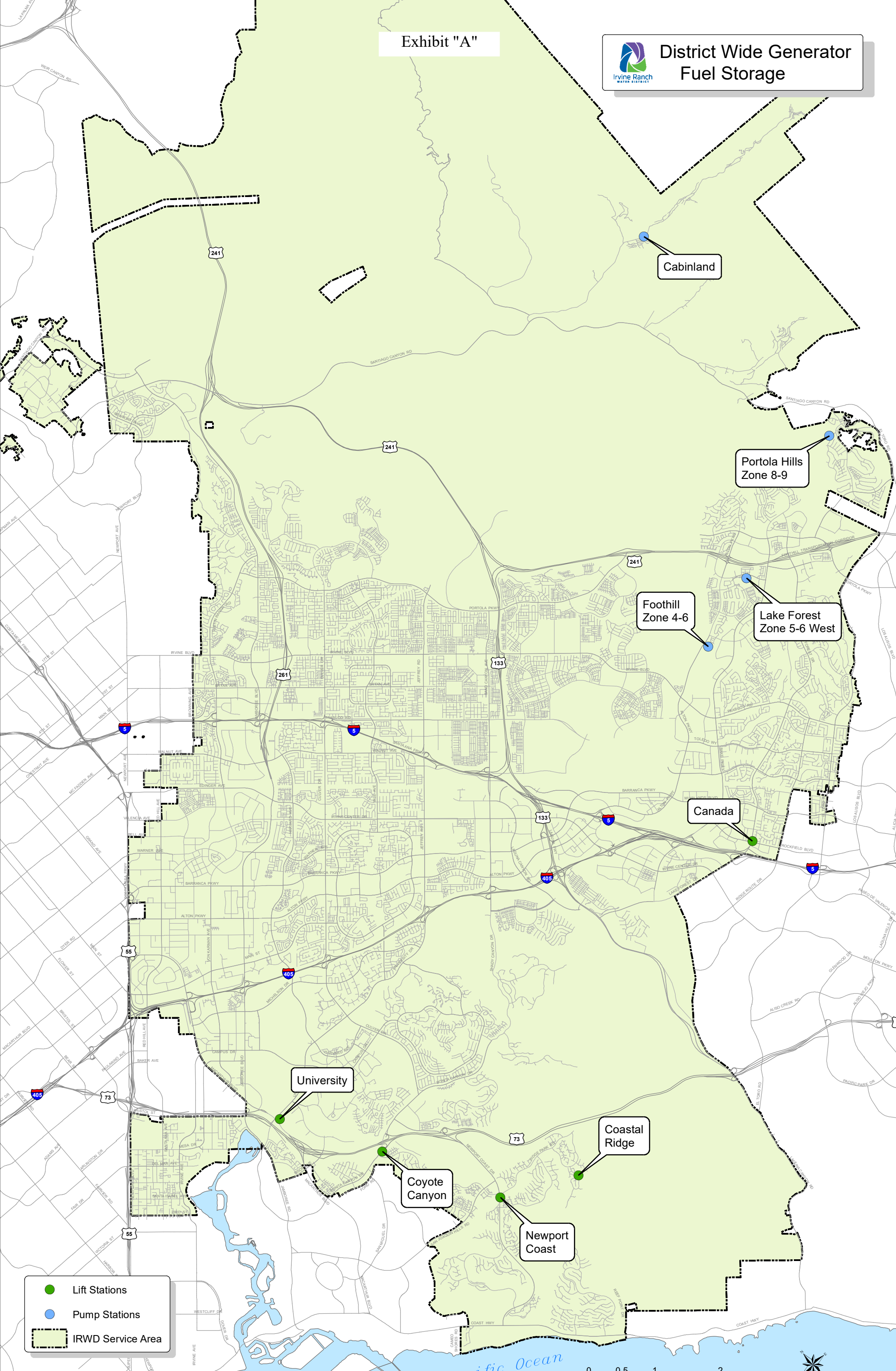
LIST OF EXHIBITS:

Exhibit “A” – Site Plan
Exhibit “B” – Variance No. 3 with Psomas

Exhibit "A"



District Wide Generator Fuel Storage



Cabinland

Portola Hills Zone 8-9

Foothill Zone 4-6

Lake Forest Zone 5-6 West

Canada

University

Coastal Ridge

Coyote Canyon

Newport Coast

- Lift Stations
- Pump Stations
- IRWD Service Area



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Exhibit "B"
IRVINE RANCH WATER DISTRICT
PROFESSIONAL SERVICES VARIANCE

Project Title: District-Wide Emergency Generator Diesel Fuel Storage
 Project No.: 11536 and 11537 Date: March 6, 2024
 Purchase Order No.: 625903 Variance No. 3

Originator: IRWD ENGINEER/CONSULTANT Other (Explain) _____

Description of Variance (*attach any back-up material*):

Addition of design phase services. Please reference attached letter.

Engineering & Management Cost Impact:

Classification	Manhours	Billing Rate	Labor \$	Direct Costs	Subcon. \$	Total \$
Engineering	-	-	153,510	8,400	71,060	232,970
(Reference attached fee breakdown)						
Total						232,970

Schedule Impact:

Task No.	Task Description	Original Schedule	Schedule Variance	New Schedule

Required Approval Determination:

Total Original Contract	<u>\$428,713</u>	<input type="checkbox"/> Director: Cumulative total of Variances less than or equal to \$75,000.
Previous Variances	<u>\$182,090</u>	
This Variance	<u>\$232,970</u>	<input type="checkbox"/> Executive Director: Cumulative total of Variances less than or equal to \$125,000.
Total Sum of Variances	<u>\$415,060</u>	
New Contract Amount	<u>\$843,773</u>	<input type="checkbox"/> General Manager: Cumulative total of Variances less than or equal to \$200,000.
Percentage of Total Variances to Original Contract	<u>97 %</u>	<input checked="" type="checkbox"/> Board: Cumulative total of Variances greater than \$200,000.

ENGINEER/CONSULTANT: PSOMAS
 Company Name

IRVINE RANCH WATER DISTRICT

M. Salcedo 03/11/2024
 Project Engineer/Manager Date

Kevin L. Burton 3/28/24
 Department Director Date

M. Salcedo 03/11/2024
 Engineer's/Consultant's Management Date

 General Manager/Board Date

March 11, 2024

Harry Cho, PE
Irvine Ranch Water District
 15600 Sand Canyon Avenue
 Irvine, CA 92618

**Subject: District-Wide Emergency Generator Diesel Fuel Storage
 Request for Professional Services Variance No. 3**

Dear Harry:

Pursuant to our discussions, this proposal summarizes the additional engineering services provided for the District-Wide Emergency Generator Diesel Fuel Storage Project. Modifications to the plans were required based on plan check comments from OCFA, City of Newport Beach, as well as District comments. Additional permitting fees required by the above agencies are also included.

A general description of additional work is summarized as follows:

1. Response to OCFA, Newport Beach Fire Department Permitting Comments

Psomas’ original scope of work for *Task 2.G – Permitting* included estimated labor costs for permit processing with OCFA in the amount of \$8,340. After initiation of permit applications with OCFA and the City of Newport Beach Fire Department, OCFA and the City of Newport Beach Fire Department required some of the sites be processed through the City, in lieu of directly through fire departments, triggering additional coordination.

Our estimated fee for labor costs for administration, coordination and processing to complete permit processing for this project is \$17,430, including efforts by Mullen & Associates.

2. Permitting Fees and Direct Costs

To date, Psomas has expended \$11,250 on direct costs to OCFA and City of Newport Beach Fire Department, including permit application fees, reproduction costs and mileage. Our original proposal had a budgetary number of \$3,000, so an additional amount of \$8,250 is requested. Permit fees paid on behalf of IRWD are summarized in the table below:

3. Address IRWD Comments on 100% Submittal

Psomas responded to IRWD comments provided in the 100% and Final plan submittals, some of which are not in our scope of work. While many of the comments provided by IRWD are considered typical and are not considered out of scope, some comments involved changes in the design previously submitted. A brief summary of the out-of-scope comments follows:

- A. Portola Zone 8-9 PS: The original PDR proposed a transfer fuel pump; during design, IRWD requested the removal of the transfer pump to reduce maintenance costs. Instead, the existing aboveground belly tank was replaced with a larger belly tank also reducing the construction

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 Suite 300
 Santa Ana, CA 92707

Tel 714.751.7373
 Fax 714.545.8883
www.psomas.com

Harry Cho, PE
Irvine Ranch Water District
 Page 2 of 3

footprint. In addition, the existing concrete pad was modified to provide adequate maintenance personal with access to the generator panels doors for the increased belly tank height.

- B. Portola Zone 6-8 PS: This site required multiple design revisions in the short window between the 100% submittal and Final Submittal. Initially the proposed transfer fuel pump was removed and replaced with an upsized sub-base fuel storage tank. Then, following a site visit and coordination with Cummins it was determined the existing enclosure also needed to be replaced to accommodate the proposed improvements adding time to procure the generator and belly tank. The design team was also notified the OCFA was requiring minimum property line/building clearances be met from the new belly tank and enclosure as well as a 25-foot brush clearance setback requirement, which could not be met. Considering the 25-foot setback could not be met and the cost for the enclosure, which was nearly the cost of a new generator and additional permitting requirements, IRWD ultimately decided to remove this site from the project. Psomas revised the construction documents to various levels at each decision step and ultimately removed the site from the contract documents.
- C. University Lift Station: Upon review of the approved shop drawing submittals, the project team determined the modifying the existing concrete pad to provide a raised curb to panel access would better serve the project in lieu of the proposed raised platform. The concrete modifications on both sides of the generator required relocating the generator/sub-base tank to provide a 3-foot minimum clearance between the concrete pad and wall.
- D. Psomas provided additional pre-procurement support and coordination for the generators which included synthesizing the approved shop drawing submittals and the design documents, identifying items to be provided by the contractor vs. the supplier, and updating the Project Manual to reflect the IRWD approved generator submittals.

Our estimated fee to address all additional comments on the plans and specs is \$54,740, including efforts by Mullen & Associates and Arcon Structural Engineers. This fee includes additional efforts by Arcon Structural Engineers and Mullen & Associates. Due to schedule being delayed, we have also included additional fees for management and administrative costs.

4. Construction Support

Pursuant to our discussions and per IRWD’s request, construction phase services have been added to the project scope. A general description of additional work is summarized as follows:

- A. Project management for 20 months
- B. Project teleconference meetings – 8 meetings for 2 hours each
- C. 15 RFI responses
- D. 30 submittal reviews
- E. Plan revisions – 40 hours
- F. Site visits – 6 visits for 2 hours each
- G. Record drawings. It is being assumed up to one update will be required to complete the record drawings and all submittals will be in digital format.
- H. Energy Control Procedure (ECP), prepared by Mullen and Associates – 1 per site (9 total). It is being assumed up to one update will be required to complete the ECP and all submittals will be in digital format.
- I. Provide \$15,000 for additional services, as needed.

Our estimated fee for labor costs for Construction Support for this project is \$148,110, including efforts by Mullen & Associates and Arcon Structural Engineers.

Harry Cho, PE
Irvine Ranch Water District
Page 3 of 3

ESTIMATED HOURS AND FEE

We propose to complete this additional work for \$232,970 as shown in the attached Fee Summary Table. If you have any questions, please do not hesitate to call.

Very truly yours,
PSOMAS

A handwritten signature in black ink that reads "M. Salcedo". The signature is written in a cursive style with a large, stylized initial "M".

Maira Salcedo, PE
Senior Project Manager

Attachments:
Variance Form
Fee Summary Table

IRVINE RANCH WATER DISTRICT
Additional Engineering Design Services
for the District Wide Generator Fuel Storage Project
PSOMAS - FEE SCHEDULE - VARIANCE NO. 3


Scope of Work Tasks	Psomas Work Hours											Total Hours	Labor Cost	Sub		Direct Costs	Total Fee
	QA/QC		PM		PE		PD		Admin		Electrical			Structural			
	Wk-Hrs	Amount	Wk-Hrs	Amount	Wk-Hrs	Amount	Wk-Hrs	Amount	Wk-Hrs	Amount	Amount			Amount			
SCOPE OF WORK TASKS - VARIANCE NO. 3																	
Task 1 - Project Management																	
Project Status Reports	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	\$ -	\$ -	\$ -
Meetings/Coordination	0	\$ -	4	\$ 1,020	12	\$ 2,340	0	\$ -	0	\$ -	16	\$ 3,360	\$ -	\$ -	\$ -	\$ 3,360	
Quality Control/Quality Assurance	4	\$ 1,080	0	\$ -	0	\$ -	0	\$ -	0	\$ -	4	\$ 1,080	\$ -	\$ -	\$ -	\$ 1,080	
Sub-total Task 1 - Project Management	4	\$ 1,080	4	\$ 1,020	12	\$ 2,340	0	\$ -	0	\$ -	20	\$ 4,440	\$ -	\$ -	\$ -	\$ 4,440	
Task 2A - Permitting																	
Address OCFA and City of Newport Beach Fire Dept Permitting Plan Check Comments	0	\$ -	6	\$ 1,530	20	\$ 3,900	40	\$ 6,000	50	\$ 6,000	116	\$ 17,430	\$ -	\$ -	\$ -	\$ 17,430	
Sub-total Task 2A - Permitting	0	\$ 0	6	\$ 1,530	20	\$ 3,900	40	\$ 6,000	50	\$ 6,000	116	\$ 17,430	\$ 0	\$ 0	\$ 0	\$ 17,430	
Task 2B - Permitting Fees																	
Additional Permit Fees - Direct Costs Only	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	\$ -	\$ -	\$ 8,250	\$ 8,250	
Task 3 - Final Design																	
Address IRWD Comments at 100% Submittal - Additional Design Effort	1	\$ 270	22	\$ 5,610	56	\$ 10,920	110	\$ 16,500	0	\$ -	189	\$ 33,300	\$ 13,000	\$ 8,440	\$ -	\$ 54,740	
Sub-total Task 3 - Final Design	1	\$ 270	22	\$ 5,610	56	\$ 10,920	110	\$ 16,500	0	\$ 0	189	\$ 33,300	\$ 13,000	\$ 8,440	\$ 0	\$ 54,740	
Task 4 - Construction Support																	
Project Management	0	\$ -	40	\$ 10,200	20	\$ 3,900	0	\$ -	8	\$ 960	68	\$ 15,060	\$ -	\$ -	\$ -	\$ 15,060	
Project Meetings	0	\$ -	24	\$ 6,120	12	\$ 2,340	0	\$ -	0	\$ -	36	\$ 8,460	\$ 2,400	\$ 440	\$ -	\$ 11,300	
Request for Information	0	\$ -	16	\$ 4,080	40	\$ 7,800	0	\$ -	0	\$ -	56	\$ 11,880	\$ 4,500	\$ 880	\$ -	\$ 17,260	
Submittal Reviews	0	\$ -	20	\$ 5,100	90	\$ 17,550	0	\$ -	0	\$ -	110	\$ 22,650	\$ 6,000	\$ 1,320	\$ -	\$ 29,970	
Plan Revisions	0	\$ -	0	\$ -	8	\$ 1,560	32	\$ 4,800	0	\$ -	40	\$ 6,360	\$ 6,000	\$ 1,380	\$ -	\$ 13,740	
Site Visits	0	\$ -	18	\$ 4,590	6	\$ 1,170	0	\$ -	0	\$ -	24	\$ 5,760	\$ 2,700	\$ 880	\$ 150	\$ 9,490	
Record Drawings	0	\$ -	2	\$ 510	6	\$ 1,170	68	\$ 10,200	0	\$ -	76	\$ 11,880	\$ 6,740	\$ 1,380	\$ -	\$ 20,000	
Energy Control Procedure	0	\$ -	2	\$ 510	4	\$ 780	0	\$ -	0	\$ -	6	\$ 1,290	\$ 15,000	\$ -	\$ -	\$ 16,290	
Contingency	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ 15,000	\$ -	\$ -	\$ -	\$ 15,000	
Sub-total Task 4 - Construction Support	0	\$ -	122	\$ 31,110	186	\$ 36,270	100	\$ 15,000	8	\$ 960	416	\$ 98,340	\$ 43,340	\$ 6,280	\$ 150	\$ 148,110	
Total Estimated Work	5	\$ 1,350	154	\$ 39,270	274	\$ 53,430	250	\$ 37,500	58	\$ 6,960	741	\$ 153,510	\$ 56,340	\$ 14,720	\$ 8,400	\$ 232,970	

Legend	
<u>In-House Staff and Billing Rate</u>	<u>Subconsultants</u>
QA/QC - QA/QC Manager (\$270/hr)	Electrical Engineering - Mullen and Associates
PM - Project Manager (\$245/hr)	Structural Engineering - Arcon Structural Engineers
PE - Project Engineer (\$190/hr)	
PD - Project Designer (\$145/hr)	
Admin - Administrative Assistant (\$105/hr)	

April 16, 2024

Prepared by: M. Robinson / J. Shih /
E. Akiyoshi

Submitted by: K. Burton

Approved by: Paul A. Cook 

ENGINEERING AND OPERATIONS COMMITTEE

GEOGRAPHIC INFORMATION SYSTEM UTILITY NETWORK MIGRATION CONSULTANT SELECTION

SUMMARY:

IRWD's Geographic Information System (GIS) provider, Environmental Systems Research Institute (Esri), is sunsetting the 25-year-old data model and geographic database that provides the foundation for housing GIS data. The Utility Network (UN) migration project will convert the GIS data model to the next-generation Utility Network database. Proposals were received from four consultant teams. The team of DCSE and Esri is the most qualified, has the best understanding of IRWD's business needs, and is the most experienced with the UN. Staff recommends that the Board authorize the General Manager to execute a Professional Services Agreement with DCSE in the amount of \$599,130.

BACKGROUND:

The GIS Master Plan was presented to the IRWD Board in May 2023, and since then staff has been progressing on the roadmap activities. The Esri Enterprise License Agreement was executed in May 2023 and major upgrades to IRWD's mobile work force and mapping solutions were completed in early 2024. The next step is to migrate the GIS data model from the existing Geometric Network to the new UN. Every 20 to 25 years, Esri (IRWD's GIS software vendor) updates its underlying data structure and supporting database. Esri is sunsetting the Geometric Network in 2026 which requires every user to move to the UN. This will impact every IRWD Enterprise System business process that integrates with GIS (e.g., Maximo, CC&B, Field Mapplet, Plan Check, and all interactive mapping solutions). Additionally, IRWD will need the new UN to continue updating and adding new facilities into GIS. The new UN will provide significant benefits to IRWD including the following highlights:

- Ability to build digital twins of vertical assets (e.g. pump stations, tanks, and wells),
- Enhanced tracing capabilities within distribution and collection systems,
- Ability to build hydraulic network diagrams of specific areas of IRWD (e.g. built-in hydraulic schematics for Santiago Canyon areas); and
- Optimized use of secure web-based interactive office and field mobile solutions.

The scope of work for this project includes future proofing the GIS system by upgrading the GIS infrastructure for the UN and reviewing IRWD's business processes and system architecture to help ensure successful integrations with the Enterprise systems. Additionally, the team will be implementing a test environment to minimize disruptions to the production systems, completing error resolution and data cleanup to maximize benefits of the UN, and updating all integrations between GIS and other IRWD systems. Training and documentation for editing workflows and management of the UN will also be provided.

Consultant Selection:

Staff invited five consultants to propose on the project. Proposals were received from four consultants: 1898, DCSE, Cyient, and Langan. HDR declined to submit a proposal. While all consultants were well qualified, DCSE teamed with Esri to help create a well-balanced team, presented the most clearly articulated project approach, best understands IRWD's business needs, and showed an excellent project understanding that meets IRWD's goals and objectives for this project.

- *Project Team:* Esri's Professional Services team will bring the most updated and thorough understanding of how to bridge IRWD needs with the new UN. With DCSE as the project lead, this team is best suited for the migration. DCSE has extensive experience in all aspects of this project. They recently completed successful UN water projects for San Bernadino Municipal Water District, Santa Clarita Valley Water Agency, and the City of Long Beach. DCSE's project manager, Ali Diba, has over 30 years of experience implementing GIS in the water industry and has managed numerous projects to completion for IRWD over the years.
- *Project Understanding:* DCSE's proposal demonstrated the most clearly described methodology to successfully migrate IRWD into the UN and fully maximize the tools available for advanced modeling, tracing, and editing functionalities. Additionally, the level of effort presented in each of the tasks indicates a clear understanding of how to update the integrations with other IRWD Enterprise Systems (e.g. Oracle CC&B, Maximo, Field Mapplet, and other GIS based mapping solutions).
- *Technical Approach:* DCSE articulated a robust approach that discusses in detail the System Architecture design, pilot environment for proof of concepts and training, full testing environment to ensure successful integrations without disrupting IRWD's current business processes, and final production environment.

The Consultant Evaluation Matrix is provided as Exhibit "A". DCSE's scope of work and fee proposal are provided as Exhibit "B". Staff anticipates that the project will be completed in October 2025. Staff will provide a presentation at the Committee provided as Exhibit "C".

FISCAL IMPACTS:

The Capital Planning Support 23/24-24/25, Project 11782, is included in the FY 2023-24 Capital Budget and has sufficient funds for the Utility Network Migration project.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

RECOMMENDATION:

That the Board authorize the General Manager to execute a Professional Services Agreement with DCSE in the amount of \$599,130 for the Utility Network Migration, Project 11782.

LIST OF EXHIBITS:

- Exhibit “A” – Consultant Evaluation Matrix
- Exhibit “B” – DCSE’s Scope of Work and Fee Proposal
- Exhibit “C” – Draft Powerpoint Presentation

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Exhibit "A"
**GIS Utility Network Migration
 Consultant Selection Matrix**

Item	Description	Weights	1898 & Co.	DCSE	Cyient	Langan			
A	<u>TECHNICAL APPROACH</u>	60%							
1	Project Understanding	30%	3	1	2	4			
2	Preliminary Data Readiness Assessment	25%	3	1	2	4			
3	Error Resolution and data cleanup plan	15%	2	1	3	4			
4	GIS Integration Approach	20%	3	1	2	4			
5	Innovative Approach and Solutions	10%	1	2	4	3			
	<u>TECHNICAL APPROACH (WEIGHTED SCORE)</u>	100%	2.7	1.1	2.4	3.9			
B	<u>QUALIFICATION AND EXPERIENCE</u>	40%	2.0	1.0	3.0	4.0			
	<u>COMBINED WEIGHTED SCORE</u>		2.4	1.1	3.0	3.5			
	Ranking of Consultants		2	1	3	4			
C	<u>SCOPE OF WORK</u>								
TASK		Task Hours	FEE	Task Hours	FEE	Task Hours	FEE		
	SUB-TOTAL ENGINEERING SERVICES, FEE	2,804	\$549,030	4,410	\$587,920	Not Provided	\$497,499	1,744	\$292,000
	Optional Tasks								
2	Upgrade to 2024 or 2025 Network Management Release			70	\$11,210				
	TOTAL ENGINEERING SERVICES, FEE	2,804	\$549,030	4,480	\$599,130	Not Provided	\$497,499	1,744	\$292,000

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REQUEST FOR PROPOSAL FOR

Utility Network Migration

Response File

March 22nd, 2024



**SUBMITTED TO
IRVINE RANCH WATER DISTRICT**

Submitted by:
DCSE Inc.
23461 S. Pointe Drive, Suite 300
Laguna Hills, CA 92653



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EXECUTIVE SUMMARY

FIRM OVERVIEW

Established in 1989 in Southern California, DCSE is a multidisciplinary firm with more than 30 professionals in water, wastewater, and environmental engineering, including experts in chemical, mechanical, civil, and software engineering. Our team also comprises skilled project managers, GIS analysts, software engineers, and developers, all with significant experience. DCSE is known for its innovative GIS-enabled water/wastewater information management systems and offers a wide range of integrated GIS services. These services span needs assessment, system implementation, GIS data conversion, enterprise system deployments, geodatabase and Utility Network migrations, and the development of advanced applications.

Our principals have been deeply involved with Esri GIS since the mid-1980s, applying GIS solutions to a variety of challenges. Over four decades, we have developed a diverse array of GIS skills, serving over 300 cities, municipalities, and water and wastewater authorities. Our focus at DCSE is threefold:

- Providing clients with optimal solutions that respect budget and schedule constraints.
- Promoting efficient solutions within the engineering services industry.
- Maintaining our leadership position in GIS consulting.

DCSE has been an Esri Silver Business Partner for the past 23 years, currently transitioning to Gold. Our partnership with Esri has been marked by several awards:

- Esri IMGIS Conference 2022 Award for Utility Network Implementation.
- Esri 2006 Foundation Partner of the Year.
- Our MapLibrary product was featured by Esri at their 22nd and 23rd User Conferences (UC) for hosting Map Gallery content and the People’s Choice Award.
- Esri User Conference 1992 - Winner of the Most Analytical Solution Using Dynamic Segmentation Toolbox.

Our specialties at DCSE include:

- ArcGIS Utility Network Management Specialty.
- ArcGIS System Ready Specialty.
- ArcGIS Marketplace Provider Award.

Figure 1 and Figure 2 show DCSE’s award history and the type of awards, respectively. The DCSE team has extensive experience with GIS, having worked on as many as 150 water, 100 sewer, and 50 storm drain systems. This deep expertise in managing wet utilities through GIS will be a significant advantage that the DCSE team contributes to this project.

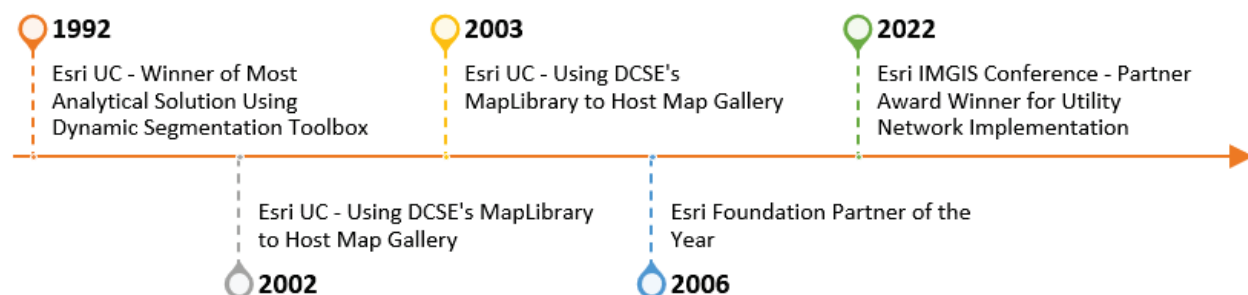


Figure 1 – DCSE Award History at a Glance



Figure 2 - DCSE Awards

UNIQUE DIFFERENTIATORS

Proximity to IRWD: DCSE's main office, located in Laguna Hills, is conveniently situated within a half-hour drive of the City of Irvine. This proximity allows our managers and analysts to attend all required meetings and training sessions in person if needed, ensuring prompt and efficient collaboration.

Experience with IRWD's GIS Data: Leveraging over a decade of partnership with IRWD, DCSE possesses unparalleled expertise in the district's GIS data. Our profound familiarity with IRWD's infrastructure not only minimizes the need for introductory phases but also accelerates our ability to customize solutions to meet IRWD's specific requirements efficiently.

Key highlights of our collaboration with IRWD include:

- ✚ Execution of a pilot Utility Network migration project for IRWD's water system. This initiative allowed us to identify key challenges and necessities, ensuring a robust understanding of what's required for success in a full migration.
- ✚ Our team has implemented a wide array of systems for the district, including, but not limited to, MapLibrary, Mapplet & Field Mapplet, as well as Plancheck, CC&B and Maximo Integrations. Notably, our software engineers are the original architects behind the MapLibrary & Mapplet systems for the district. This foundational involvement grants us an exceptional understanding of the intricacies involved in system integration dynamics.
- ✚ The recent development of a GIS master plan for IRWD further deepened our knowledge of the agency's systems and operational workflows. Our engagement provided us with comprehensive insights into the nuances of IRWD's infrastructure and strategic objectives.

At DCSE, our extensive history of successful projects and profound knowledge of IRWD's GIS infrastructure positions us uniquely to deliver customized, effective solutions that address the specific challenges and ambitions of the district.

Esri Partnership and Industry Leadership: As an Esri partner, DCSE remains at the cutting edge of industry developments. Our active involvement in beta-testing Esri solutions and related technologies keeps us ahead in the GIS field. We are also harnessing the expertise of Esri, the global market leader in GIS software, by bringing them into this project as a subcontractor for System Architecture Design.

Esri Partner Award Recognition: Our receipt of the Esri Partner Award for Utility Network Implementation in the water industry in 2022 is a testament to our expertise and leadership in this sector, highlighting our commitment to delivering top-tier GIS solutions.

This project & upgrade, informed by previous pilot projects and a comprehensive GIS Master Plan, promises advanced modeling, tracing, editing functionalities, and increased data quality. Key to this transformation is the meticulous preparation involving staff, infrastructure alignment, and the integration of IRWD's systems with critical enterprise systems like Maximo, Oracle CC&B, and Field Mapplet.

DCSE's approach leverages its extensive experience with IRWD's systems and its proven track record in similar migrations. The project entails a detailed preliminary data readiness assessment, adoption of Esri's latest network management releases, and a focused upgrade on system architecture to support the Utility Network fully. Critical to the project's success are a proactive project management team, the application of agile methodologies for smooth execution, and a strategic testing phase to ensure seamless integration and functionality across IRWD's enterprise environment. This holistic approach not only addresses the technical transition but also emphasizes training and change management to ensure IRWD staff are fully prepared to leverage the new system capabilities effectively.

A. SCOPE

A.1. PROJECT UNDERSTANDING

IRWD's GIS team has been managing the infrastructure GIS data for potable water, recycled water, and wastewater systems in an enterprise geodatabase. The data is used to support workflows at IRWD for operations, engineering, planning, customer service, and conservation. Though the data has geometric networks present in it, IRWD is planning to drop the geometric networks to be able to edit the data in ArcGIS Pro. IRWD has been researching the Utility Network for some time, and aligning the infrastructure, staffing, and resources in preparation. IRWD has pursued a couple of projects building towards the proposed project:

- Pilot area utility network migration for water system about a couple of years ago – this project provided an overview to IRWD on the migration process, and how the data looks like upon migrating to Utility Network format. DCSE assisted IRWD with this effort. Key takeaways of this pilot migration project were:
 - IRWD has the migration mapping ready between the existing GIS data and utility network for the water system. It only needs to be validated against the latest data, and latest asset package from Esri.
 - DCSE also has an insight into the validation errors for the data. We hence have developed methodologies to resolve them or pre-empt them before occurring.
- Recent GIS Master Plan studied the feasibility and benefits of adopting the Utility Network as IRWD's data model. IRWD's incentive to migrate data to ESRI's Utility Network data model is to enable new data management and analysis capabilities. DCSE has demonstrated to IRWD through the pilot some examples of these functionalities including advanced tracing, 3D models for vertical assets, and the robust quality control measures built into the utility network.

The goal at the end of the project is to have IRWD fully maximize Utility Network's tools, including advanced modeling, tracing, and editing functionalities with increased data fidelity. Additionally, the project will catalog, identify impacts, and integrate GIS with enterprise systems including but not limited to Maximo, Oracle CC&B, and Field Maplet.

DCSE has experience in successfully migrating data to the Utility Network at agencies with similar requirements to IRWD. Specifically, with IRWD, DCSE has extensive understanding of the enterprise environment, integrations, business processes in place, and how Utility Network can be leveraged to enrich the user experience.

As part of the proposal, DCSE is including a preliminary data readiness assessment of IRWD's three systems to properly scope the project. The assessment includes a review of IRWD's geodatabase, evaluation of the initial health of the data.

Our report is in **Appendix A – Utility Network Assessment** section of the proposal. The proposal's scope of work, approach, and recommendations shall reflect the results of the preliminary data readiness analysis. The Approach and Scope sections following contain sufficient detail that allow IRWD to clearly understand the proposed approach and the dependent tasks that may impact the timely delivery of the products and/or services.

A.2. PROJECT APPROACH

A.2.1. Overall Project Approach

DCSE Team has several years of experience with GIS for water and wastewater systems, and specifically for utility Networks. We also have experience with IRWD’s GIS environment and the integrations in place and have working experience with IRWD’s staff. The following project workflow has been created to provide IRWD with the deliverables within schedule, and budget. We have 3 project components that will be worked on simultaneously by different team members. **Figure 3** shows the integration activities with green lines, data related activities in orange, and infrastructure related activities in blue.

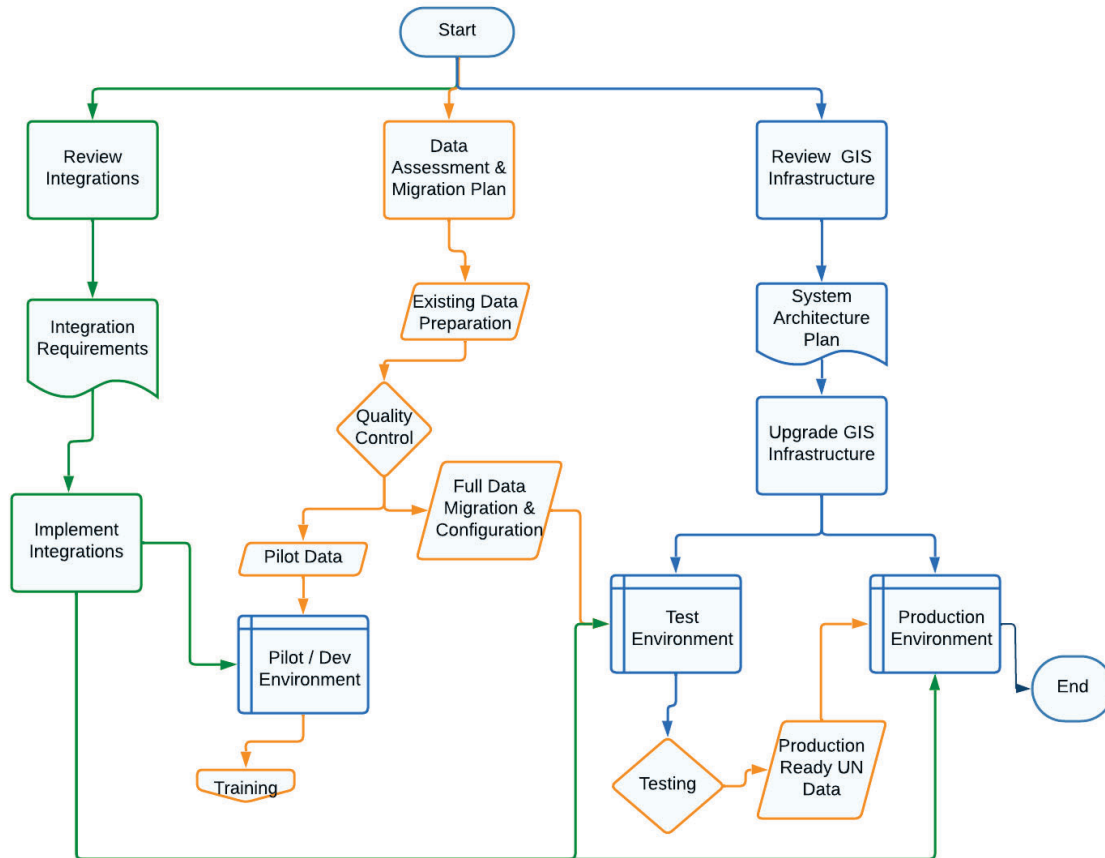


Figure 3 – High Level Project Workflow Diagram

The following are the highlights of our project approach:

- Proactive Project Management Team with Agile approach will ensure the project runs smoothly. We have included an Assistant Project Manager to our team who will be dedicated for ensuring timely deliverables, and seamless communication.
- Network Management Plan – Esri has several software releases every year or so. For organizations planning the migration, upgrading to the latest version can be overwhelming considering data, integrations, and infrastructure need to be migrated. With the goal of easing change management, Esri has hence developed a network management plan. This plan defines the software versions, and ensures a stable environment with these versions for a 4-year window. We plan to implement the Network Management Release 2023 for IRWD which will

provide a stable environment until mid-2027. Additionally, there are several new functionalities that are available for the enterprise and ArcGIS Pro versions corresponding to this plan. As an optional task, we are also providing IRWD with an optional task, to upgrade to the 2024 network management release which will be stable until 2028.

- The System Architecture will be designed using Industry Standard Best Practices, and considers scalability, availability, security, performance, and integrations. Several of the components recommended should already be covered by IRWD's Enterprise Agreement for licensing with Esri.
- We will provide recommendations for continuing system monitoring, measuring performance and validation. During the testing phase we will identify discrepancies with latency, indexes, and the overall health of the system. We will then optimize the system with resolution to issues around configurations, capacity, and environment.
- Testing is a critical component of this project. The following is our plan for testing, and final implementation:
 - A pilot environment with limited data will be set up in the beginning – especially for testing integrations. It will be used for prototyping and proof of concepts. It will also be used to provide IRWD with training at the early stages of the project. The pilot will facilitate testing integrations and their impact on data models, service configuration, applications, system architecture, business processes, and staff training.
 - A full testing environment will be created once the data migration is complete. The original intention of this environment is to perform testing on the data, integrations, and all utility network functionalities implemented. Testing will be performed by DCSE as well as IRWD in this environment.
 - When testing is completed, DCSE will deploy the final Utility Networks on Production. There will be some testing to ensure that the production is working, along with integration points. (The full testing environment will now serve as IRWD's development environment to test any new integrations, or for staff training.)
 - Our testing process will validate all deliverables including business requirements, data models, data editing workflows, system interfaces, map products, data migration approach and tools.
- Utility Network Architecture and Schema - We identified 2 separate Utility Networks that will be necessary as per the data models and Industry Standard Best Practices.
 - The Potable and Recycled water systems will be one data set. The water type attribute separates the facilities. They will be further sub-divided into separate subnetworks at system tier as potable water system, and recycled water system respectively. Within each system, there will be separate subnetworks for pressure zones, cathodic protection system, isolation, and district metered areas.
 - The Wastewater system will be in a separate data set, with tiers at system level, and sub area level.
 - The project timing coincides with the release of Esri's Essential Data Model for water and sewer systems. We plan to use these latest asset packages from Esri and extend the data model to accommodate IRWD's needs. This includes adding new asset types, attributes, attribute and topology rules, and domains.

- Utility Network functionalities will be implemented including sub networks (as described above), Containers, Assemblies, Pre-defined traces, Network Diagrams, and Z-Coordinates.
- Our wholistic approach to migration encompasses all aspects of the IRWD’s GIS components – not just data. Understanding that this is a big step for IRWD, we will port over elements on the enterprise level – not just individual user level. E.g. Styles, shared network traces will be created for use at enterprise level.
- ArcGIS Pro editing experience will be fine-tuned for the IRWD GIS editors with attribute rules, connectivity rules, containment rules, relationships, group templates, label expressions, and symbology. Note that these will be set at enterprise level. The result will enable IRWD staff to edit and maintain the infrastructure data in the Utility Network format along with the existing integrations.
- We encourage IRWD staff to leverage training resources (listed in the GIS Master Plan, and **Appendix A – Assessment**) available from Esri to prepare for the Utility Network editing and management. While Esri training is generalized, the training in this project will cover the specifics of IRWD’s workflows. The end goal of the training is to ensure that IRWD staff can edit and administer the Utility Network, and the new environment successfully upon go-live. This is indicated by the business process continuity and optimal performance of the enterprise GIS after the utility network migration.
- Most importantly, we prioritize change management in this project. Adopting new technology depends on the user education, and the learning curve. Wherever possible, we will minimize changes to the user interface – e.g. ensuring same mapping symbology, and functionalities. Building in pilot will promote faster adoption, and minimizing User interface changes will promote broader adoption. The GIS Team can participate in all the scrum meetings held for the project. DCSE team will conduct meetings with the GIS Team to review each deliverable. The GIS Editors and Administrators will get the opportunity to work with the Utility Network from pilot stage itself, and by the end of the project, be proficient in editing and leveraging the new Utility Network capabilities. The users will be provided with demonstrations of new functionalities as soon as they are ready, to maximize exposure.

A.2.2. Project Management

DCSE Team includes a seasoned Project Manager supported by a dedicated Assistant Project Manager for this project. The DCSE Team follows the Project Management Institute’s (PMI) approach for Initiating, Planning, Monitoring, Controlling, and Closing all its Projects’ tasks and processes.

DCSE will be setting up a Teams channel for regular communication with IRWD. The Teams channel will contain all meeting notes and facilitate communications. Details of this approach are described in **Task 1 – Project and Data Management**.

DCSE will also utilize the Agile project methodology to provide specific item delivery and progress transparency and provide a platform for all project stakeholders to communicate. **Figure 4** describes the agile process.

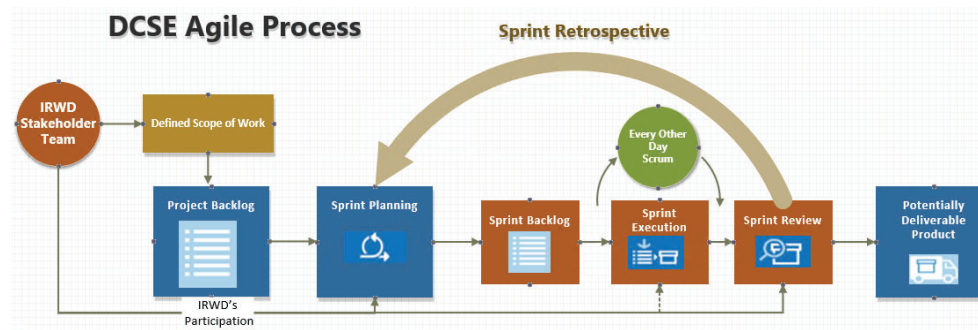


Figure 4 - DCSE's Agile Process

The tool used for this purpose is Azure DevOps, shown in **Figure 5**.

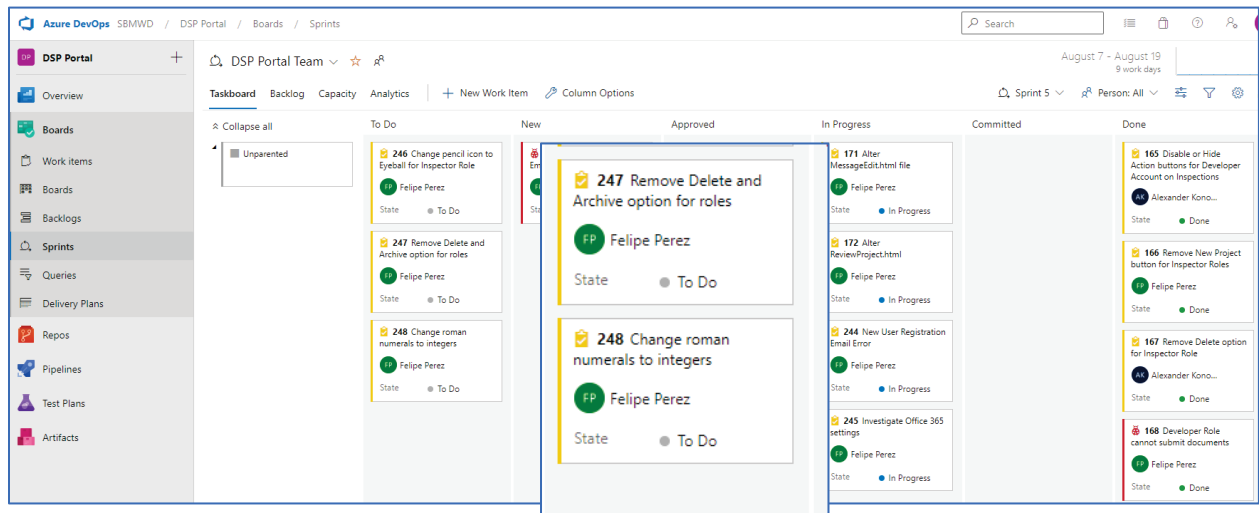


Figure 5 - Azure DevOps Interface

IRWD’s project members will be given an introduction and training to using Azure DevOps during Task 1. The Project will be divided into individual Sprints with goals and objectives defined in the Sprint Planning meeting. The Sprint Planning meeting is a crucial meeting where participation of IRWD staff will help define the immediate deliverables resulting from Sprint. The process of formulating the project Sprints is shown in **Figure 4**. IRWD staff, as the stakeholders and product owners, are expected to participate in the Sprint Planning and Sprint Review processes. Project Tasks 1 will serve as the steps for creating the DevOps tasks.

Per the Sprint structure, the project team will hold bi-weekly SCRUM Meetings (lasting 15-20 minutes) to check in on item progress and, if necessary, address any item where progress has halted. The conclusion of a Sprint will result in a project item delivery.

IRWD can view project status at any time and receive automatic email notifications on items of interest in the Microsoft TEAMS Channel.

A.2.3. Quality Control

Our project organization and implementation strategies are designed to reduce risk by incorporating different project phases. Different aspects of the project will undergo QA/QC efforts. SCRUM meetings within the proposed Agile methodology will provide rapid feedback during QA/QC efforts and provide transparency to all stakeholders regarding staff management, budgeted item progress, and the

scheduling of invoicing. Sprints are based upon a timeline and must end with a delivery of a scoped deliverable. As a result, the nature of Sprints will help keep the Project progressing according to schedule.

An important note on quality control for Utility Network (UN) is that implementing the Utility Network inherently improves the data quality tremendously due to Utility Network functionalities like topology, and attribute rules. Having a test environment allows for thorough testing of all functionalities. However, prior to Go live, the production will also be tested and validated against workflows, for accessibility and performance. DCSE uses TestRail to streamline and automate testing workflows and applications.

A.3. SCOPE OF WORK

The following scope of work has a breakdown of required tasks per the RFP, and some optional tasks we believe will add value to IRWD. Each task lists the associated deliverables, and expectations from IRWD. The **Figure 6** illustrates the components of our utility network migration plan.

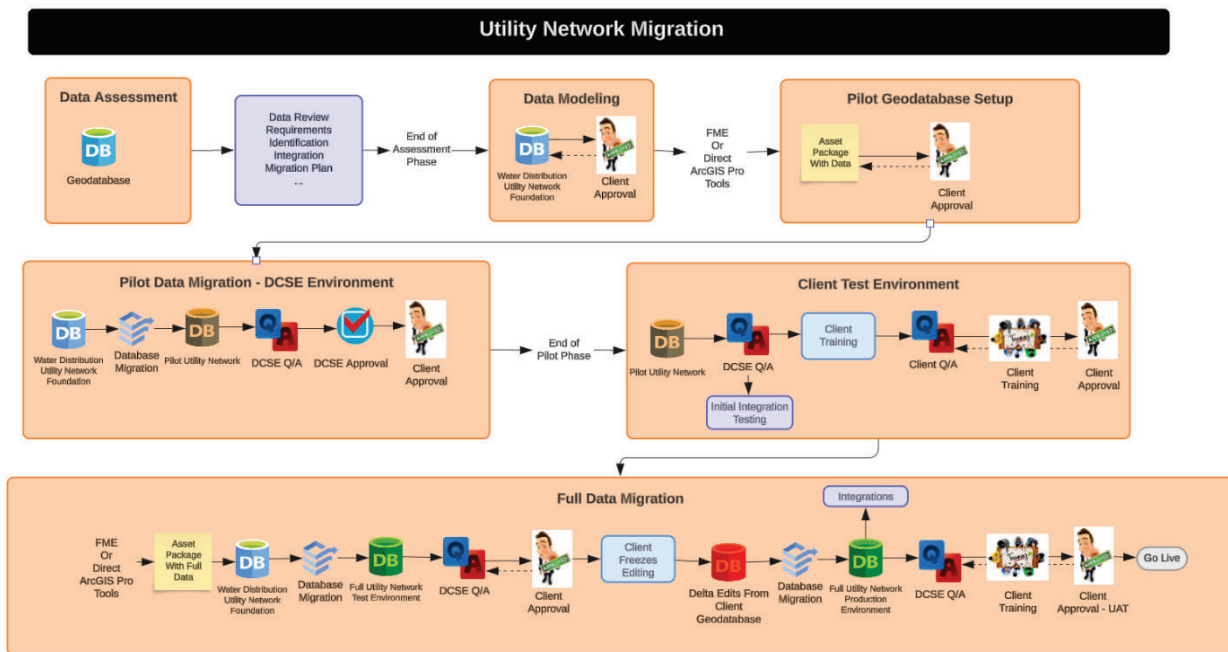


Figure 6 - Utility Network Migration Workplan

A.3.1. Required Tasks

A.3.1.1. Task 1 – Project and Data Management

DCSE understands the importance and the need for managing this project formally. We propose to use Microsoft TEAMS technology, which is a technology used by both IRWD and DCSE, to manage this project. All projects management activities will be tracked in a Microsoft TEAMS channel created by DCSE (or IRWD if desired) which will be shared with the project team. This includes:

- Project Progress Meetings (bi-weekly) – Agendas to be provided as part of the meeting invite and recorded in TEAMS. Project progress meeting notes will be documented in Microsoft TEAMS TEAMS.Notes, action items will be tracked in TEAMS.Tasks.

- Original schedule and bi-weekly schedule updates - uploaded document containing Gantt chart in TEAMS.Files
- Work Plan will be developed at the start of the project and will be maintained in Microsoft TEAMS.Files and updated bi-weekly (if revised). A typical workplan is shown **Figure 6** This can serve as a starting point for the project for water, sewer, and recycled systems. Note the QA/QC steps and the IRWD team approval at different deliverable stages of the system.
- Brief project summary will be provided by the project team on a bi-weekly basis covering the activities and accomplishments of the prior week. Briefs will be updated on the Microsoft TEAMS.Files.
- Status tracking and reporting including issue tracking will be done in either Azure DevOps or Jira depending on the preference of the IRWD team. Any resource needs will be identified and tracked in these systems as we perform Sprints in the project.
- Project Budget Tracking and Invoicing will also be tracked in Microsoft TEAMS.Files. Budget tracking will be maintained in a Microsoft Excel file which will be updated when a new invoice is created and submitted to IRWD. The **Figure 7** shows the configuration of the Microsoft TEAMS for managing the Utility Network Conversion.

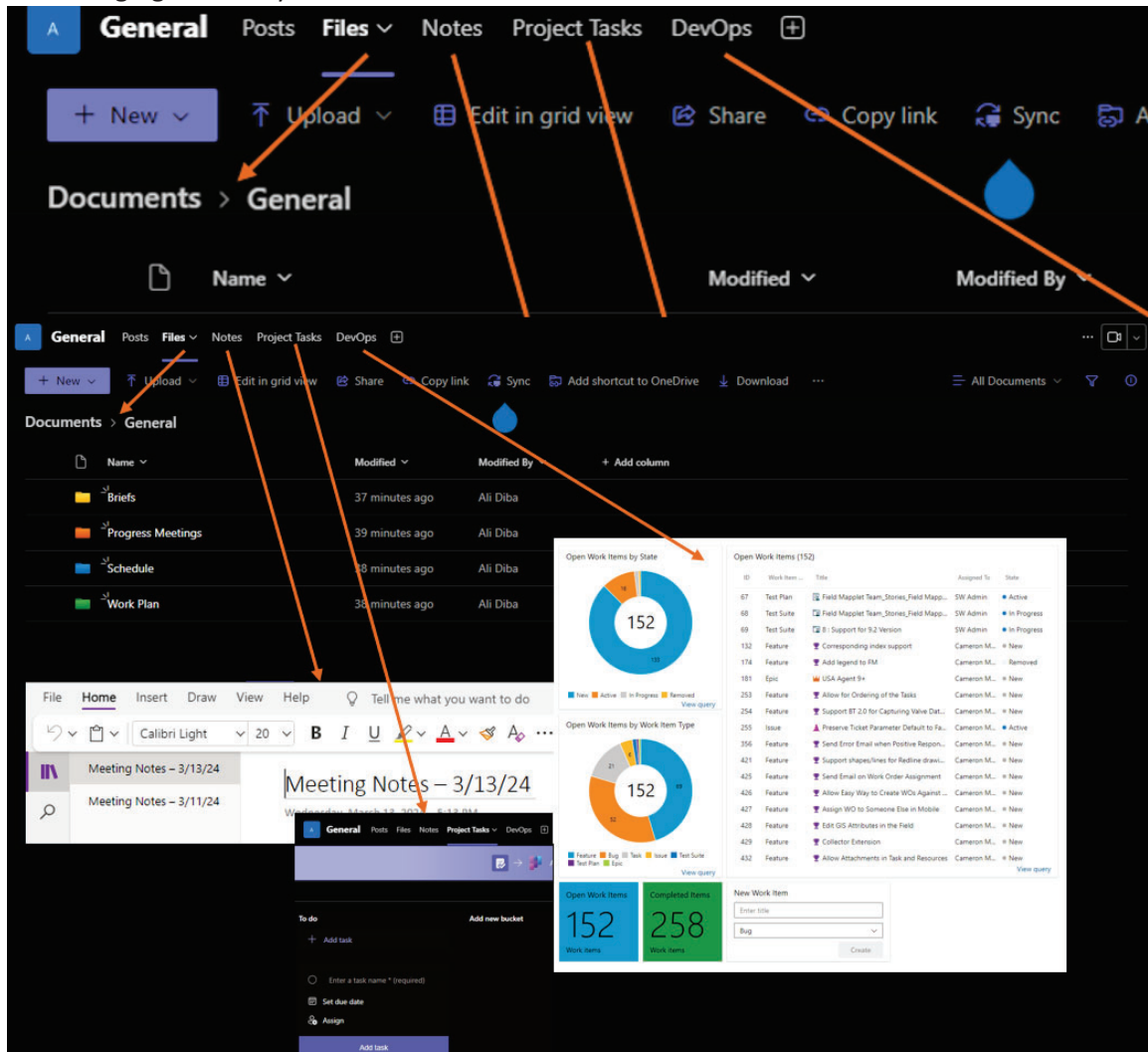


Figure 7 - Microsoft TEAMS Configuration for Managing the Utility Network

DCSE Deliverables: Meeting Minutes and Recordings, Project Schedule in GANTT Chart Format, Work Plan, Status Reports, DevOps – Organized inside Microsoft TEAMS Channel

IRWD’s Responsibility: Provide information, Participate in Meetings, review, and approve deliverables.

A.3.1.2. Task 2 – Review of Existing Information

This task covers the review of the IRWD’s existing geodatabase setup and to identify the roadmap for implementing the capabilities such as existing GIS data schema, attribute rules, editing processes, integrations, and workflows. As with regard to integrations we anticipate visiting all of the systems referenced in the RFP including, MapLibrary, Plancheck, Field Mapplet, Mapplet, Maximo, and CC&B.

Figure 8 shows the elements of the integration that need to be revisited and sourced to the proper branch version of IRWD.

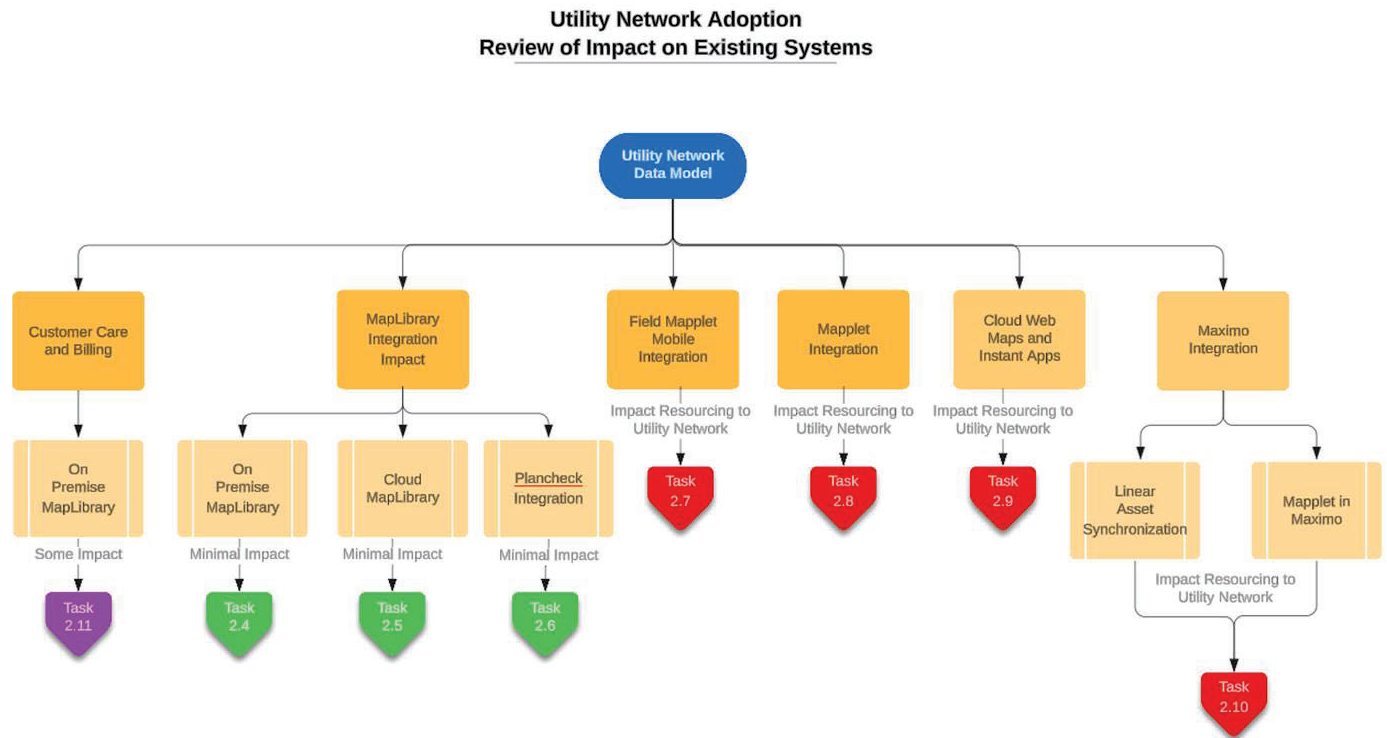


Figure 8 - Review of Impact on Existing Systems from Adopting the Utility Network

The subtasks of this Task 2 include the following:

Sub Task 2A – Identify and document the existing GIS data schema.

This task will use the data shared by IRWD for the assessment process. This task will also identify and document the attribute data that needs to be carried to the Utility Network data schema beside the fundamental changes of the core Utility Network data model. Approaches on how to preserve the attributes, e.g., GlobalIDs, will also be discussed in this sub-task.

DCSE Deliverables: Document with Existing GIS Data Schema, overview of how data will be migrated, and recommendations for UN schema extension to support IRWD’s requirements.

IRWD’s Responsibility: Provide information, review, and approve deliverables.

Sub Task 2B - Identify and document the existing attribute rules.

This task will include the identification of the existing attribute rules and the associated roadmap for implementing them under the Utility Network data model. This task will provide for planning the migration of the attribute rules. We may also identify new attribute rules during this task given the capabilities of the Utility Network.

DCSE Deliverables: Document with Existing Attribute Rules, and Recommendations for additional rules in UN environment

IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 2C – Editing processes and workflows.

This task will document the “existing” and “to-be” workflows for editing and maintenance of the GIS data in Utility Network data model. It will include the details of the new process including the design of the branch versioning for editing of the data. Workflows that impact the attribute data of Utility Network features, e.g., workflows related to adding new GPSed meters, will be discussed and a road map created for handling these meters. This information will be used in task 7 to ensure continuation of the workflows with the new Utility Network environment.

DCSE Deliverables: Document with Existing Attribute Rules, and Recommendations for Workflows in UN environment

IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 2D – MapLibrary Integration Sourcing to Utility Network.

This task covers the integration requirements and the roadmap to be used to make sure MapLibrary remains functional, connected, and able to retrieve the artifacts as related to GIS content.

DCSE Deliverables: Document with MapLibrary Integration Requirements for UN environment

IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 2E – Cloud MapLibrary Integration Sourcing to Utility Network.

This task covers the integration requirements and the roadmap to be used to make sure Cloud version of MapLibrary remains functional, connected, synchronized, and able to retrieve the artifacts as related to GIS content.

DCSE Deliverables: Document with Cloud MapLibrary Integration Requirements for UN environment

IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 2F – Plancheck Integration Sourcing to Utility Network

This task covers the integration requirements for the Plancheck which is a module of MapLibrary. Any linking of documents in Plancheck with the GIS features needs to be revisited to make sure that the link is not broken.

DCSE Deliverables: Document with Plancheck Integration Requirements for UN environment

IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 2G – Field Mapplet Mobile Integration

Field Mapplet uses Mobile Map Packages that are produced in an automated process from ArcGIS Pro. So the ArcGIS Pro projects used by Field Mapplet needs to be resourced to the new Utility Network branch versioned data sources. All extension of Field Mapplet, including, Sewer Line Cleaning, Manhole

Inspection, Leak Detection Protection, Leak Tracking, Underground Service Alerts, Cathodic Protection, Water Loss Prevention, OnSite Zero Usage, Illegal Connection, and Customer Care and Billing Meter Service Requests. This task also includes resourcing the Esri Dashboards that are setup to view the progress of the above in Field Mapplet.

DCSE Deliverables: Document with Field Mapplet Integration Requirements for UN environment
IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 2H – Mapplet Integration

Mapplet is a viewer application that is used in many applications at IRWD including MapLibrary, Maximo, Cloud Mapplet, as well as being used as a standalone tool for viewing online maps of IRWD. Mapplet currently includes data such as potable, recycled, and sewer facilities. These data sources will all be moved to Utility Network and Mapplet needs to be resourced accordingly. In addition, Mapplet connects to data from external data sources such as viewing of the CC&B data.

DCSE Deliverables: Document with Mapplet Integration Requirements for UN environment
IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 2I – Cloud Web Maps and Instant Apps

Some of the data layers used in Mapplet are also published to ArcGIS.COM for use with the Cloud Mapplet and the Instant Apps that are available for all Mapplet users. Migration to Utility Network would pose a requirement to add a new step which is converting the data to basic geodatabase which can be uploaded to ArcGIS.COM. This is due to the fact that ArcGIS.COM currently does not support Utility Network although this capability may be in the road map of Esri for the future. This requirement will be revisited at the time of implementation in case the support for Utility Network in ArcGIS.COM has changed.

DCSE Deliverables: Document with Cloud Web Maps Integration Requirements for UN environment
IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 2J – Maximo Integration

Maximo integration includes two distinct activities. These include the synchronization of the GIS assets as well as displaying the Mapplet inside Maximo. The synchronization needs to be revisited and resourced while preserving the linkage and the history of the assets, locations, as it related to GIS. A plan will be developed during this task to achieve these objectives. The Mapplet inside Maximo will benefit from the general Mapplet conversion and resourcing but needs to also be visited to make sure all functionalities currently provided in Mapplet for Maximo is supported under the Utility Network framework.

DCSE Deliverables: Document with Maximo Integration Requirements for UN environment
IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 2K – Customer Care and Billing (CC&B) Integration

Integration of the CC&B extension in Field Mapplet and the associated Esri Dashboards needs to be visited considering resourcing the meter/service point data under the Utility Network data model.

DCSE Deliverables: Document with CC&B Requirements for UN environment
IRWD's Responsibility: Provide information, review, and approve deliverables.

A.3.1.3. Task 3 – Review and Upgrade GIS Infrastructure – Esri, Haritha, Ali

Under this task, the DCSE Team will conduct a System Architecture Design Workshop and prepare a System Architecture Design Report as described below followed by implementation.

Sub Task 3A – Develop Architecture Plan – Per 2023 Network Management Release Plan

IRWD is in the process of upgrading to ArcGIS Enterprise 10.9.1, which is consistent with the 2022 network management release plan. This plan is good until mid-2026. Considering that the existing environment must run in parallel until go-live for Utility Network, we recommend a parallel new environment for the Utility Network. Also, to provide longevity to IRWD’s enterprise environment, we are recommending the implementation of Esri’s 2023 Network Management Release plan with ArcGIS Enterprise 11.1, which will be good until at least mid-2027.

The DCSE Team will lead a three-day remote System Architecture Design Workshop to determine an appropriate GIS architecture for the needs and business drivers identified by the District. Each eight (8) hour workshop will be led by a senior Esri system architecture design consultant with active participation by DCSE Team and appropriate IRWD GIS, IT, operations, and business representatives. To help prepare for and facilitate the activity, DCSE Team will provide preparatory materials before the remote meetings. During the System Architecture Design Workshop, the system architecture design consultant will lead discussions on the following topics:

- Architecture vision
- Business drivers
- Sites (e.g., offices, data centers)
- User workflows
- Data architecture
- Application architecture
- Technology architecture
- System security
- Other Considerations

This workshop will help the DCSE Team to identify appropriate system architecture and configuration opportunities, while considering technical inputs including non-functional requirements, constraints, standards, and policies. Based on the workshop results, DCSE Team will prepare a System Architecture Design Report. A sample table of contents for the report is provided in **Appendix E – Sample Architecture Design Report**. The System Architecture Design Report will consider the District’s current hardware and architecture standards and practices. The System Architecture Design Report will include the following:

- System architecture diagram showing the location and interaction of GIS hardware and software components.
- System sizing recommendations
- Hardware platform recommendations
- Network security and communications recommendations.

The System Architecture Design Report will be submitted for review, comment, and acceptance.

DCSE Deliverables: Three-day Remote System Architecture Design Workshop, System Architecture Design Report

IRWD's Responsibility: Provide information, review, and approve deliverables.

Sub Task 3B – Implement Architecture Plan with 2023 Network Management Release Plan

Based on the architecture plan, DCSE team will coordinate with IRWD IT staff for getting the infrastructure ready. This includes providing the specs, and when the machines are ready, validating the specs. DCSE team will then create the databases, update them with the utility network for pilot datasets so that integrations task can get a head start while rest of the data gets migrated. DCSE Team will perform installations and configurations in compliance with the Architecture plan from sub task 3A.

Next, DCSE Team will review the Utility Network management Plan, alongside the integration roadmap listed in the GIS Master Plan. We will create a document with roadmap and guidelines or the maintenance and upgrades of the GIS infrastructure for the Utility Network and all the integrations for the foreseeable future.

DCSE Deliverables: Software Installation Checklist, Upgraded Enterprise Environment Ready to Support the New Utility Network on IRWD Site, Roadmap and Guidelines documentation for maintaining the GIS Infrastructure for Utility Network and All IRWD Integrations.

IRWD's Responsibility: Provide information, access to IRWD infrastructure, review, and approve deliverables.

A.3.1.4. Task 4 – Data Assessment and Migration Plan

The DCSE Team will create a tailored migration plan that complies with industry standard best practices for UN after the data assessment is finished. The purpose of this activity is to confirm the data's integrity and provide a comprehensive plan of recommendations for getting ready for migrating the data to the Utility Network asset package. A thorough plan for getting IRWD's GIS ready for the migration will also be part of the task's deliverable. The DCSE team will perform the following subtasks for this task.

Subtask 4A - Data Review and Planning

DCSE Team has included the preliminary data readiness in **Appendix A – Utility Network Assessment**. This task builds on the preliminary data readiness, with in-depth data assessment necessary to migrate to the utility network and implement all the desired functionalities. It also includes conducting a data completeness and accuracy analysis of the existing GIS data. We will perform the following checks in the data using ArcGIS Data reviewer, Python and SQL scripts, and network connectivity tools in ArcGIS Desktop:

- Geometry checks
- Spatial Coincidence checks
- Network Connectivity checks.
- Unique ID checks
- Domain consistency checks
- Attribute completeness checks for essential attributes (lifecycle status, subtype, ownership, integration fields, etc.)
- Sewer system will have additional checks.
 - Pipes
 - Flow Direction

- Upstream Inverts > Downstream Inverts
- Identify and flag structures with:
 - Split manholes.
 - Elevated manholes
 - Drop manholes.
 - Junction structures

DCSE Deliverables: Updated Data Assessment Report

IRWD's Responsibility: Provide latest Geodatabase Data, review, and approve deliverables.

Subtask 4B - Prepare Existing Data on Enterprise Geodatabase

IRWD already has editor tracking fields in the data which will be leveraged to track edits in existing data while DCSE team migrates the data. DCSE team will add a couple of fields for tracking migration status of the features on IRWD's enterprise geodatabase using a python script.

- **The migration ID field** – this will be a concatenation of the feature class, subtype, object ID and global ID. An automatic rule will be set up so that the field gets automatically populated for new features.
- **The destination field** – this will be concatenation of the destination feature class, asset group, and asset type. (This field will be blank originally, and populated at the end of this task, based on the migration plan.)

DCSE Deliverables: Updated Enterprise Geodatabase on IRWD site

IRWD's Responsibility: Provide Access to Enterprise Geodatabase, review, and approve deliverables.

Subtask 4C - Data Remediation Plan and Analysis Summary Results

DCSE will create documentation for the data health report and data remediation plan. The data remediation plan will include all necessary changes to the data that must be done prior to migration. DCSE team will categorize the errors by type, priority, and provide a resolution for fixing the errors. It will also have QA/QC measures to ensure that the errors are completely resolved.

DCSE Deliverables: Data Health Report and Data Remediation Plan.

IRWD's Responsibility: Review Documentation, Provide Feedback, and Approve deliverables.

Subtask 4D - Asset Packages Configuration

An asset package contains the schema for the utility network. Industry standard Asset packages are available from Esri for water and wastewater systems. DCSE team will also compare the latest Esri Asset packages for water and wastewater systems with IRWD's existing schema. At this stage, we will update the Industry Standard Asset Packages to meet IRWD's needs. These changes include adding new domains, domain values, adding new fields to support integrations, adding attribute rules, connectivity rules, containment rules, and adding new asset types and groups if necessary. The result from this activity will be updated Utility Network asset packages for water, and wastewater systems, that support migration, integrations, and workflows for IRWD. Configurations will be documented – including associations, terminals, subnetworks, traces, network diagrams, etc. The configurations in asset package will be leveraged first, and we will build on it based on IRWD's requirements.

DCSE Deliverables: Updated Asset Package, Schema documentation.

IRWD's Responsibility: Review Schema, Provide Feedback, and Approve deliverables.

Subtask 4E - Data Mapping and Analysis

DCSE team will analyze IRWD's GIS data to determine suitability for the core Utility Network model and identify data irregularities that are incompatible with Utility Network requirements. As part of this task, we will prepare the migration spreadsheets that map all feature classes, fields, subtypes, and domains to the utility network dataset. DCSE will walk through the spreadsheets with IRWD first. IRWD will have the opportunity to review the spreadsheets prior to use in migration.

DCSE Deliverables: *Data Migration Spreadsheets.*

IRWD's Responsibility: *Review Spreadsheets, Provide Feedback, and Approve deliverables.*

Subtask 4F - Migration Plan

The DCSE Team will develop a detailed customized migration plan and roadmap for full migration to the Utility Network. The following is an overview of the migration plan as it relates to IRWD.

- DCSE Team will use the Esri's Data Loading Tools for the migration. The Data Loading Tools use spreadsheets to migrate the data. These spreadsheets are user-friendly and can be used to repeat the migration several times if necessary (e.g. migrating before fixing errors and after fixing errors).
- For the potable and recycled water systems, DCSE can leverage the work done during the pilot study from the past. For the wastewater system, DCSE has a template used for schemas similar to IRWD's Sewer dataset.
- The migration plan will also document the quality control measures to ensure accuracy, and completeness of the migrated data.

DCSE Deliverables: *Migration Plan Document including Quality Control Measures.*

IRWD's Responsibility: *Review Plan Document, Provide Feedback, and Approve deliverables.*

Subtask 4G - Data Loading to Utility Network Asset Package in ArcGIS Pro

DCSE team will load the existing GIS data into the updated Utility Network asset packages in ArcGIS Pro using the Data Loading Tools from Esri. We will stage the Utility Network and apply the asset package which will result in the utility network datasets with the water, recycled water, and wastewater data. These datasets will be used to further investigate irregularities in the Utility Network data. The data will be in file geodatabase format at this stage. DCSE will perform this task on pilot data set, which will be deployed on the test environment to test integrations. The pilot data will have all errors resolved and configurations completed and will allow for thorough testing of the integrations. IRWD's GIS Editors, and Administrators will be provided with the necessary privileges, and licensing to access the Utility Network on the pilot environment.

Then the task will be repeated for the entire dataset, and the full dataset with utility networks will be deployed to the production environment. The full dataset will have some errors that will be resolved in task 5. By this time, IRWD should have ability to work in the Utility Network using the preliminary utility network data on the production environment. All GIS Editors, and Administrators will be provided with the necessary privileges, and licensing to access the Utility Network in the production environment.

DCSE Deliverables: *Pilot UN datasets (deployed to pilot test server for integrations), Full UN Dataset (deployed to IRWD's test & production server).*

IRWD's Responsibility: *Review deliverables, provide feedback, and approve deliverables.*

A.3.1.5. Task 5 – Test Environment, Error Resolution, and Data Cleanup

Sub Task 5A – Develop a Plan for Error Resolution and Testing

This task will use information from prior Task to test the migration process and develop an error resolution and cleanup plan. The DCSE team will describe the test plan, define test cases, and describe the various stages of testing to final user acceptance and deployment. DCSE team will clearly define and communicate the process to IRWD to ensure existing integration points are kept and in working condition.

DCSE Deliverables: Test Plan Documentation with test cases, and Error Clean Up Plan

IRWD’s Responsibility: Review deliverables, provide feedback, and approve deliverables.

Sub Task 5B - Quality Control and Fixing the Data

The DCSE team will perform analysis and QA/QC of IRWD’s existing database for the Utility Network conversion. We will provide a systematic approach to identifying, understanding, and resolving issues that may occur during the data migration. This will include reviewing errors, checking, and verifying ESRI documentations, examining log files, identifying patterns and dependencies, validating, and testing the data. DCSE team will include documentation on resolving the errors, cleanup process, issues encountered, recommended resolution options and solutions implemented.

DCSE will update the utility network datasets with the z coordinates, if IRWD prefers. (The pilot dataset will have the z-coordinates populated to give IRWD the experience of working with the 3D dataset.) Water and recycled systems will be provided with the z coordinates using contour data. Sewer system will use the invert elevations for the z-coordinates.

DCSE Deliverables: Error-free Datasets with Utility Networks for Water (potable and recycled) and Wastewater Systems, and Supporting Data

IRWD’s Responsibility: Review deliverables, provide feedback, and approve deliverables.

Sub Task 5C – Utility Networks Deployments and Configurations

The Utility Networks will be deployed to DCSE’s environment first. DCSE team will then proceed with fixing the errors based on the documentation provided. Subnetwork definitions and container definitions often result in dirty areas. Due to this reason, DCSE team will also create the subnetworks, and containers at this stage, and validate and test them for error-free utility network datasets.

The Utility Networks will be configured with the functionalities described in table below: (note that we are providing some examples below -this is not a complete list. Complete list will be developed as part of asset package configuration subtask 4D and implemented in this task).

Table 1 – UN Configurations

Configuration	Water & Recycled Water Examples	Wastewater Examples
Containers	Pump stations, PR Stations, Tank sites, Vaults, Wells, Interconnections	Lift stations, Treatment Plants, Network / Junction Structures
Associations	All facilities that are not connected by a line – e.g. backflows to meters	All facilities where flow direction must be enforced – e.g. junction structures
Subnetworks	Potable Water & Recycled Water Systems, Pressure Zones, Cathodic Protection, Isolation, Water Metering Areas	Wastewater System, Sub areas,
Traces	Isolation, System (Water, Recycled)	Upstream, downstream

Configuration	Water & Recycled Water Examples	Wastewater Examples
Network Diagrams	Schematics of major facilities, Pressure zones	Schematics of major facilities, Sub areas
Attribute Rules	Unique ID, Symbol Rotation,	Attribute transfer of invert elevations
Connectivity Configurations	Valves must connect to 2 pipes	Connectivity between cleanouts and service lines.
Terminals	Pump stations, System meters, Tanks, Wells, Pumps, Check valves, PR stations and valves	Lift stations, Junction structures, outfalls

A copy of the dataset will be preserved at this stage to get ready for production.

DCSE Deliverables: Error free, Configured Datasets with Utility Networks for Water (potable and recycled) and Wastewater Systems, and Supporting Data

IRWD’s Responsibility: Review deliverables, provide feedback, and approve deliverables.

Sub Task 5D – Utility Networks Testing

At this stage, DCSE will migrate the completed and Configured Utility Network datasets to IRWD’s test environment. Thorough testing will be conducted on the new utility network datasets including the integrations on IRWD’s test environment. Upon DCSE’s completion of testing and validation, IRWD can start testing the Utility Networks, along with configurations and integrations. IRWD’s GIS Editors and Administrators will be provided with the necessary privileges, and licensing to access the Utility Network in this Environment.

DCSE Deliverables: Error free, Configured Datasets with Utility Networks for Water (potable and recycled) and Wastewater Systems – Deployed to IRWD’s Test Environment.

IRWD’s Responsibility: Review deliverables, participate in testing, provide feedback, and approve deliverables.

A.3.1.6. Task 6 – Final Implementation and GIS Integrations Update

Sub Task 6A – Final Implementation

After Tasks 4 and 5 have been completed, this task will implement the plans described for full implementation and migration to the Utility Network. DCSE Team will compare the Utility Network datasets archived prior to testing stage and update it with any changes that happened to existing data. IRWD’s GIS Editors and Administrators will be provided with the necessary privileges, and licensing to access the Utility Network on the final implementation / production.

The DCSE Team will provide support until the utility network is fully implemented. This will include support for user training, issue resolution, performance monitoring and other training required during the Final Implementation process. The final implementation will result in a fully working utility network environment that enables IRWD to use all tools available in the utility network (tracing, subnetworks, containers, etc.).

DCSE Deliverables: Error free, Configured Datasets with Utility Networks for Water (potable and recycled) and Wastewater Systems – Deployed to IRWD’s Production Environment.

IRWD’s Responsibility: Review deliverables, provide feedback, and approve deliverables.

Sub Task 6B – Update Existing Integrations

IRWD’s GIS system is integrated with several enterprise business systems described in Task 2. This task includes the following:

- Analyze and document the impacts of the UN migration to all existing integrations.
- Provide recommendations on how and when the integrations should move forward alongside the Utility Network migration process.
- Implement the recommendations for updating the integrations.
- The goal of this task is to ensure seamless data exchange between GIS and other enterprise systems.

DCSE Deliverables: Updated Integrations on IRWD’s Production Environment, working with the new Utility Network datasets.

IRWD’s Responsibility: Review deliverables, provide feedback, and approve deliverables.

A.3.1.7. Task 7 – Workflow To Edit and Manage UN Data/Schema and Data Analysis

Sub Task 7 A – Workflow Configuration and Documentation

Task 2 documents the current workflows for IRWD. As part of this task, DCSE will configure workflows for IRWD to ensure that the GIS administration and editing experience is smooth, and seamless. We will be setting up map templates in ArcGIS Pro for publishing, editing, quality control, and data analytics. Editing templates, feature templates, and group templates will be created according to IRWD’s Standards. Current business processes will be automated using scripting, geoprocessing tools, or tasks wherever feasible.

The workflows related to branch versioning will also be defined, with editing process for typical redlines, new developments, bulk edits to facilitate integrations, and the like. Right after the pilot migration in task 4, we will assist in setting up workspace setup, permissions, templates, and establish rules. This will establish a structured and efficient workflow for editing in Utility Network. Later, the configuration will be done for the final production datasets and Utility Network Feature Services. As part of the configuration, DCSE team will create 1 Web Map, 1 Web Scene, and 1 Experience Builder with tracing capability each for water, and wastewater systems.

Documentation will be created, and tested to validate that the workflows perform successfully in the new Utility Network environment for editing, versioning, quality control, testing, and backup and recovery. Separate documents will be created for the GIS Users, GIS Editors and GIS Administrators.

DCSE Deliverables: *Workflow Documentation, Workflow Configuration, ArcGIS Pro Templates for Editing, Mapping, Publishing, Feature Templates, Styles, Web Maps, Web Scenes, and Experience Builder Apps.*

IRWD’s Responsibility: Review deliverables, provide feedback, and approve deliverables.

Sub Task 7B – Training

Most of our training sessions will be held in person, with some remote training when preferred by IRWD. All training sessions will be recorded, and videos will be provided to IRWD.

Prior to training:

The IRWD staff will be ready for training by the time pilot is completed. DCSE team will create a training roster with the IRWD staff names, roles, and identify the privileges needed based on the workflows performed by the user or editor. With the IRWD GIS Administrator’s approval, we will define the roles on the server. IRWD’s GIS Administrator can shadow DCSE staff performing these administrative tasks – this will be part of the administrator training as well.

DCSE team will conduct a pretraining session with each GIS User / Editor / Administrator to ensure that:

- The IRWD Staff has the right tools, licenses, and extensions (ArcGIS Pro 3.1, Utility Network User Type if necessary, right browser if using web maps or Experience Builder).
- The IRWD Staff have access to the Utility Network feature service.
- The performance of the Utility Network Service on the IRWD Staff's is optimal – we will test with some edits, and traces.

Pre-training checklists will be used to ensure that the requirements have been met. DCSE will also collect source material from IRWD for use in training demos and hands-on exercises. E.g. red line markups, as-built drawings for Capital Improvement Project, or for a new development.

Training Materials:

DCSE team will provide the trainees with the following materials prior to training:

1. User Guide and Workflows Documentation – separated for each system and user group – systems are water (Potable water, and recycled water) and Wastewater systems. User groups are user, QC staff, and editor. Administrators will have same documentation as their material does not vary by the system type.
2. Cheat sheet with short cuts.
3. Power point presentation to guide the training.
4. Hands on training exercises for each workflow.

Training Session:

A typical training session will start with explaining the concept using the power point, referencing the documents, and demonstrating an example. Training sessions will always have a recap of the prior session. All training sessions will be recorded and provided as deliverables.

For the hands-on exercises part, DCSE team will oversee the trainees while they work on the sample workflows. If the exercises cannot be completed during session, DCSE team will be available to answer any queries whenever IRWD staff is working on the exercises. DCSE Training Team will be available on Microsoft Teams and be ready for a screen share session.

Administrator Training

Duration

Upon completion of the pre-training, DCSE team will start with the training spread over 2 weeks, and in increments of 4 hours. Training will be conducted 2 times a week, with a total of 16 hours (2 weeks x 4 times a week x 2 hours).

Training Outline

- Administration of the UN Geodatabase
- Administration of the UN Feature Service
- Understanding UN Schema and Architecture
- Schema changes
- Administering Bulk Edits, and bulk migration (new developments)
- User and License Administration
- Optimizing ArcGIS Pro for Administrative Tasks

- Branch Version Administration
- UN Configuration and Management (specific to water, and sewer)
 - Terminals
 - Subnetworks
 - UN Rules
 - Network diagrams.
 - Asset Packages
- Portal Administration for UN Components – Sharing, Access

GIS Editor Training

Training Duration

Upon completion of the pre-training, DCSE team will start with the training spread over 8 weeks, and in increments of 2 hours. Training will be conducted 2 times a week, with a total of 32 hours (8 weeks x 2 times a week x 2 hours). Roughly 60% of the training will focus on the water (potable + recycled) system, and 40% on the wastewater system.

Training Outline

- Introduction to Utility Network Elements, and Schema
- Migration mapping – how the data was migrated and where all features are now located – including network, non-network, basemap, and annotation datasets.
- IRWD Editing Configuration settings in ArcGIS Pro
- Version management workflow – this will feature some simple edits performed by editors, Quality control by staff responsible for QC. This exercise will walk-through the different steps following documented workflows so that editors and quality control staff become comfortable with the branch version workflows.
- Editing Workflows
 - Document Linking
 - Maintaining the Integration Fields, Unique IDs
 - New facilities such as hydrant assemblies, meter manifolds
 - Editing attributes – impact on traceability
 - Realigning pipes
 - Segmenting (splitting) pipes
 - Lifecycle status changes – Abandoning, replacing, or removing facilities.
 - New developments with as-built drawings (CAD drawings to be leveraged if available)
 - Managing casings, easements
 - Working with annotations
 - Working with related tables
 - Connectivity and Associations
 - Containments at pump stations, tanks, treatment plants, vaults – how to maintain them, create new facilities, and leverage them.
- Data Validation (performed by editors)
 - Network Topology – Fixing Errors, validation.
 - Ensuring data is trace-able – understanding the sub networks, and editing to maintain the network connectivity, running different kinds of traces like isolation trace, subnetwork trace.

- Network diagrams – creating, updating, leveraging.
- Quality Control Workflows (performed by Quality Controllers)
 - Data integrity checks using ArcGIS Data Reviewer, and Automation in ArcGIS Pro
 - Network connectivity checks.
 - Topology Validation
- Publishing
 - Map Publishing – web map optimization, 3D scene optimization.
 - Atlas Map Series Management
 - Sharing network traces, network diagrams, and new functionalities of Utility Network for water and sewer utility network users.

GIS User Training

Please note that we will minimize changes to users view of the GIS data by having similar interfaces, symbology, and layerization that they are used to seeing. The training will focus on new UN functionalities that have become available, e.g., tracing. This will help with minimizing the change management overall.

Training Duration

DCSE team will provide training for the GIS Users – there will be 2 separate training sessions – for the water system, and sewer system. Each training will be for a duration of 3 hours, and a total of 6 hours.

Training Outline

- Introduction to the new UN data
- Accessing the UN through web applications– URLs, Credentials
- Querying data
- Tracing
- 3D Views

DCSE Deliverables: Pretraining check lists, Training, User Guides and Workflows Documentations, Hands on Training Workbooks, Cheat sheets, Training Power Points, Training Recordings

IRWD’s Responsibility: Provide source sample material needed for training, Coordinate training sessions, Attend training sessions, Follow through training exercises, Review deliverables, provide feedback, and approve deliverables.

A.3.1.8. Task 8 – Deliverables

DCSE has provided deliverable listing for each task in the scope described above, which we are listing in the table below. Our list of deliverables includes Meeting minutes for all meetings, and Digital Word, Excel, Access, and GIS files for all tasks.

Table 2 - List of Deliverables

Task #	Task / Sub Task	DCSE Deliverables
1	Project and Data Management	Meeting Minutes and Recordings, Project Schedule in GANTT Chart Format, Work Plan, Status Reports, DevOps – Organized inside Microsoft TEAMS Channel
2	Utility Geodatabase Migration	

Task #	Task / Sub Task	DCSE Deliverables
2A	Identify and document the existing GIS data schema	Document with Existing GIS Data Schema, overview of how data will be migrated, and recommendations for UN schema extension to support IRWD’s requirements
2B	Identify and document the existing attribute rules	Document with Existing Attribute Rules, and Recommendations for additional rules in UN environment
2C	Editing processes and workflows	Document with Existing Attribute Rules, and Recommendations for Workflows in UN environment
2D	MapLibrary Integration Sourcing to Utility Network	Document with MapLibrary Integration Requirements for UN environment
2E	Cloud MapLibrary Integration Sourcing to Utility Network	Document with Cloud MapLibrary Integration Requirements for UN environment
2F	Plancheck Integration Sourcing to Utility Network	Document with Plancheck Integration Requirements for UN environment
2G	Field Mapplet Mobile Integration	Document with Field Mapplet Integration Requirements for UN environment
2H	Mapplet Integration	Document with Mapplet Integration Requirements for UN environment
2I	Cloud Web Maps and Instant Apps	Document with Cloud Web Maps Integration Requirements for UN environment
2J	Maximo Integration	Document with Maximo Integration Requirements for UN environment
2K	Customer Care and Billing (CC&B) Integration	Document with CC&B Requirements for UN environment
3	Review and Upgrade GIS Infrastructure	
3A	Develop Architecture Plan – Per 2023 Network Management Release Plan	Updated Architecture Documentation for Utility Network Migration Per 2023 Network Management Release Plan
3B	Implement Architecture Plan with 2023 Network Management Release Plan	Upgraded Enterprise Environment Ready to Support the New Utility Network on IRWD Site, Roadmap and Guidelines documentation for maintaining the GIS Infrastructure for Utility Network and All IRWD Integrations.
4	Data Assessment and Migration Plan	
4A	Data Review and Planning	Updated Data Assessment Report
4B	Prepare Existing Data on Enterprise Geodatabase	Updated Enterprise Geodatabase on IRWD site
4C	Data Remediation Plan and Analysis Summary Results	Data Health Report and Data Remediation Plan.
4D	Asset Packages Configuration	Updated Asset Package, Schema documentation.
4E	Data Mapping and Analysis	Data Migration Spreadsheets.
4F	Migration Plan	Migration Plan Document including Quality Control Measures.
4G	Data Loading to Utility Network Asset Package in ArcGIS Pro	Pilot UN datasets (deployed to pilot test server for integrations), Full UN Dataset (deployed to IRWD’s test & production server).

Task #	Task / Sub Task	DCSE Deliverables
5	Test Environment, Error Resolution, and Data Cleanup	
5A	<i>Develop a Plan for Error Resolution and Testing</i>	<i>Test Plan Documentation with test cases, and Error Clean Up Plan</i>
5B	<i>Quality Control and Fixing the Data</i>	<i>Error-free Datasets with Utility Networks for Water (potable and recycled) and Wastewater Systems, and Supporting Data</i>
5C	<i>Utility Networks Deployments and Configurations</i>	<i>Error free, Configured Datasets with Utility Networks for Water (potable and recycled) and Wastewater Systems, and Supporting Data</i>
5D	<i>Utility Networks Testing</i>	<i>Error free, Configured Datasets with Utility Networks for Water (potable and recycled) and Wastewater Systems – Deployed to IRWD’s Test Environment.</i>
6	Final Implementation and GIS Integrations Update	
6A	<i>Final Implementation</i>	<i>Error free, Configured Datasets with Utility Networks for Water (potable and recycled) and Wastewater Systems – Deployed to IRWD’s Production Environment.</i>
6B	<i>Update Existing Integrations</i>	<i>Updated Integrations on IRWD’s Production Environment, working with the new Utility Network datasets.</i>
7	Workflow To Edit and Manage UN Data/Schema and Data Analysis	
7A	<i>Workflow Configuration and Documentation</i>	<i>Workflow Documentation, Workflow Configuration, ArcGIS Pro Templates for Editing, Mapping, Publishing, Feature Templates, Styles, Web Maps, Web Scenes, and Experience Builder Apps.</i>
7B	<i>Training</i>	<i>Pretraining check lists, Training, User Guides and Workflows Documentations, Hands on Training Workbooks, Cheat sheets, Training Power Points, Training Recordings</i>

We have several reports listed for each task and sub task. We will be creating a draft report in PDF format at end of the project with all the deliverables described in above table. It will contain a summary and detailed description of all tasks, and include detailed guidelines including Assessments, data models, workflows, system architecture, technical requirements, data mapping, test plans and cases, quality assurance process, training material, strategy, and ongoing maintenance plan.

Upon IRWD’s Review and Approval, the DCSE Team will provide IRWD with the Final Report in PDF format.

DCSE Deliverables: Draft Report, Final Report

IRWD’s Responsibility: Review Draft Report, Provide feedback, and Approve Final Report.

A.3.2. Optional Tasks

A.3.2.1. Task OPT-O-1 – System Performance Support

The DCSE Team will provide IRWD with remote system performance testing support in the District’s test environment (during system acceptance testing) and tuning support in the production environment (during system rollout) for the utility network implementation.

ArcGIS Monitor

At least one week prior to the engagement, DCSE Team will install and configure ArcGIS Monitor, review the District’s monitoring requirements, and demonstrate ArcGIS Monitor functionality.

After the ArcGIS Monitor deployment, DCSE Team will conduct two-day review and implement ArcGIS Monitor configuration settings based on the District's requirements specified in the accepted System Architecture Design Report, and provide knowledge transfer of standard ArcGIS Monitor technology topics such as:

- Configuration
- Administration
- Analysis and interpretation of monitoring outputs
- Custom monitoring counters and extensions, and reports.

Prior to the start of this task, DCSE Team will prepare a Software Installation Checklist that will be used to validate the completeness of ArcGIS Monitor installation. The Software Installation Checklist will be submitted for review, comment, and acceptance.

Network System Performance Testing Support – Test Environment

During the system acceptance testing task, the DCSE Team will provide five days of remote support to conduct system performance testing on the ArcGIS Enterprise system in the test environment for utility networks for water and sewer systems. The consulting services will include the following:

- Discuss and examine top 5 workflows that exhibit poor performance based on ArcGIS Monitor log files
- Review current ArcGIS product implementation and configuration
- Discuss best practices for troubleshooting performance issues
- Determine where the time is being spent in slow performing operations
- Report any system-level bottlenecks found
- Review and discuss components that are impacting performance

Upon completion of the remote system performance testing support, DCSE Team will prepare a System Performance Testing Report – Test Environment that will detail DCSE Team's findings, observations, evaluations conducted, and actions taken through the course of the testing effort.

The System Performance Testing Report – Test Environment will be submitted for review, comment, and acceptance.

System Performance Tuning Support – Production Environment

During completion of the District's production system rollout activities, DCSE Team will provide five days of remote support to conduct the system performance tuning of the production ArcGIS Enterprise system supporting the water utility network. The consulting services will include the following tasks:

- Discuss and examine top 5 workflows that exhibit poor performance based on ArcGIS Monitor log files
- Review current ArcGIS product implementation and configuration.
- Discuss best practices for troubleshooting performance issues.
- Determine where the time is being spent in slow performing operations.
- Report any system level bottlenecks found.
- Review and discuss components that are impacting performance.

Upon completion of the remote system performance tuning support, DCSE Team will prepare a System Performance Tuning Report - Production Environment that will detail DCSE Team's findings, observations, evaluations conducted, and actions taken through the course of the tuning effort. The System Performance Tuning Report - Production Environment will be submitted for review, comment, and acceptance.

DCSE Deliverables: *Two-Day Remote Installation and Configuration of ArcGIS Monitor, Five-Day Remote System Performance Testing Support for Test Environment, System Performance Testing Report – Test Environment, Five-Day Remote System Performance Tuning Support for Production Environment, System Performance Tuning Report - Production Environment*

IRWD's Responsibility: *Provide access to environment, provide licensing files, review and approve deliverables.*

A.3.2.2. Task OPT-O-2 – Upgrade to the Network Management Release 2024 or 2025

For the proposed project, DCSE Team will be implementing the 2023 Network Management Release plan for Esri that includes ArcGIS Enterprise 11.1 and ArcGIS Pro versions range from 3.1 to 3.5. This release provides IRWD with a stable environment until mid-2027. Esri is expected to release the 2024 Network Management Release (2024 to 2028) and 2025 Network Management Release (2025 to 2029) plans by the end of the proposed project. It is anticipated that the new releases will provide more functionalities, and most importantly, a stable environment for IRWD's utility network that works well with other enterprise components, operating systems, applications, and databases. In this optional task, DCSE team will upgrade IRWD to the latest Network management release plan, and ensure that all integrations, and workflows continue to be operational at IRWD.

Assumptions: *Assuming IRWD staff will assist with the hardware portions.*

DCSE Deliverables: *Upgrade IRWD' environment to comply with latest Network Management Release plan (2024 or 2025 – TBD, documentation, training on maintaining the upgraded environment*

IRWD's Responsibility: *Provide access to environment, provide licensing files, review and approve deliverables.*

A.3.2.3. Task OPT-O-3 - Yard Piping

This task is to assist IRWD in filling in data gaps, particularly at major facilities using as-built drawings.

Sub Task O-3.1 – Adding Yard Piping for Potable & Recycled Water Systems

DCSE is providing this optional task so that we can update any information from as-built drawings if deemed necessary by IRWD. If IRWD opts for this task, it is best to perform it within Task 4, prior to data migration.

Assumptions: *Assuming 200 as-built sheets of Standard Arch D or E size, 1" = 40' scale.*

IRWD Responsibility: *Provide source as-builts, review, and approve deliverables.*

Deliverables: *Updated Potable & Recycled Water Utility Network Data*

Sub Task O-3.2 – Adding Yard Piping for Wastewater System

DCSE is providing this optional task so that we can update any information from as-built drawings if deemed necessary by IRWD. If IRWD opts for this task, it is best to perform it within Task 4, prior to data migration.

Assumptions: *Assuming 200 as-built sheets of Standard Arch D or E size, 1" = 40' scale.*

IRWD Responsibility: *Provide source as-builts, review, and approve deliverables.*

Deliverables: Updated Wastewater Utility Network Data

A.3.2.4. Task OPT-O-4 - 3D Models.

DCSE will utilize AI-powered drones to collect high-resolution aerial photographs of four (4) of IRWD's plant sites (One tank site, one booster station, and two Lift stations).

The collected images will then be processed by our photogrammetry specialist to generate a precise and dynamic 3D model of the asset. The 3D model will take advantage of the Utility network's 3D support and act as a digital counterpart to the physical structure/asset, allowing the user to view the asset and its features from multiple angles.). **Figure 9** provides an example of the resulting deliverable for this optional task.

3D models help our clients to make informed decisions based on complete visibility. They can also be used to document the existing conditions of the structure/asset with impressive detail and clarity. This 3D model can also be used to improve the details of the Utility Network in the plant areas where the geometry and location of the vertical assets are currently unavailable.

DCSE team has performed this task as part of pilot study for IRWD a couple of years ago for a water pump station.



Figure 9 – Left side - Sample Drone Model overlaid with UN Data, Right side – UN data in 3D View , refined per Drone model.

Assumptions:

- Contiguous outdoor areas larger than 8,000 sqft and indoor areas larger than 5,000 sqft need to be assessed on a case-by-case basis.
- Outdoor areas are not within restricted airspace. DCSE will assess each site before the data gathering phase.

Deliverables: 3D Models of 4 facilities, Documentation, and usage demonstration, Updated Utility Network Data.

IRWD Responsibility: Provide access to the facility, review and approve deliverables.

B. TEAM

The **Figure 10** presents the organization chart specifically tailored for this project, illustrating the dedicated team structure and roles. Later in this section, we will detail the qualifications and expertise of our team members.

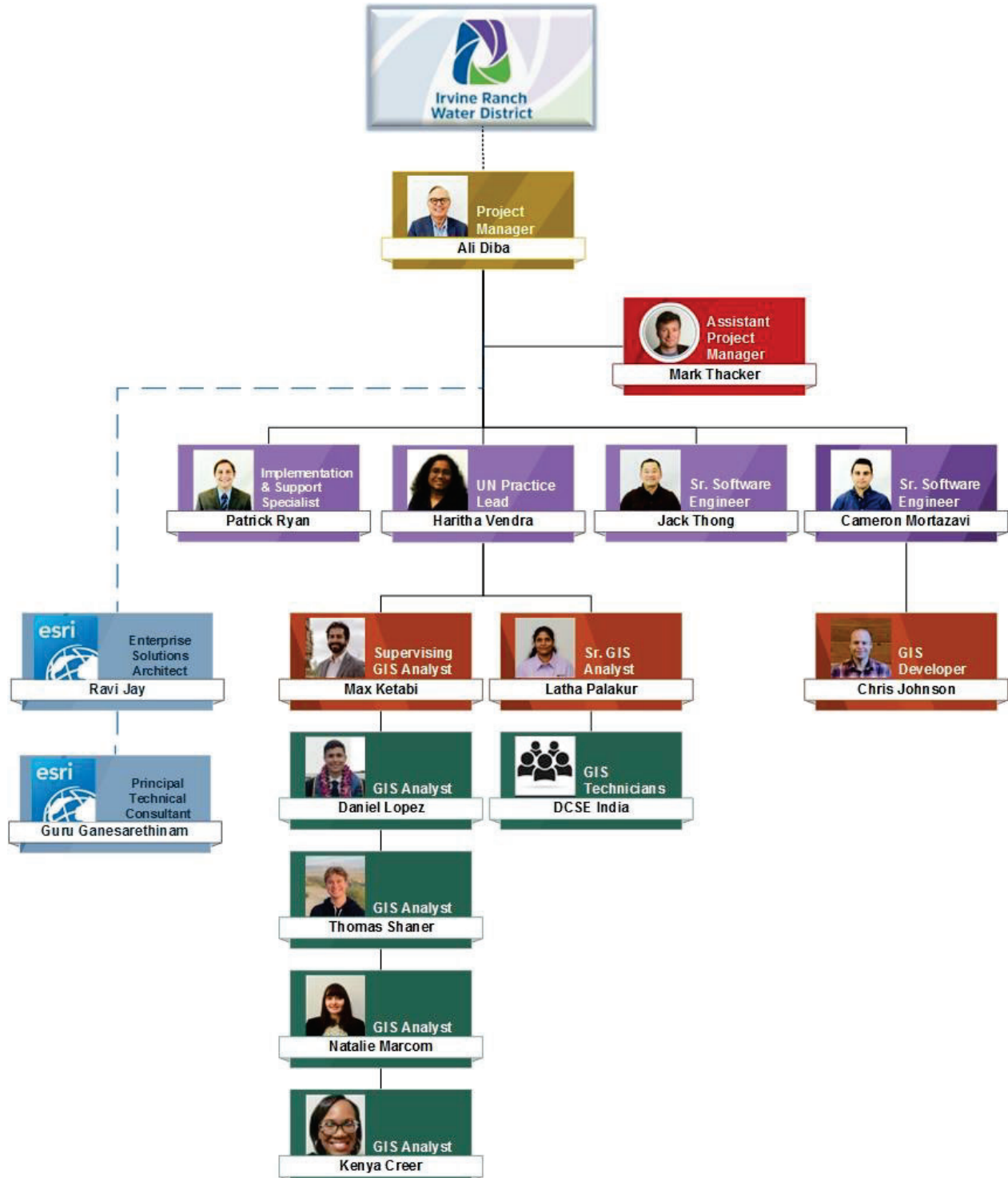


Figure 10 - Organization Chart

Table 3 - Staff Experience & Availability Summary

Staff	Proposed Project Titles (% Time Commitment)	Location	Experience Summary	IRWD UN & Integration-related Experience
Ali Diba	CEO of DCSE/ Project Manager (15%)	Laguna Hills, California HQ	30+ years of experience implementing GIS in the Water Industry. Seasoned architect and evangelist of Utility Network implementations. Experienced agile technology implementer.	Architect of many IRWD integrations. Main author of IRWD's GIS Masterplan.
Mark Thacker	Assistant Project Manager (15%)	Laguna Hills, California HQ	20+ years of experience in project management, spanning acquisitions, SaaS transformation, and global expansion. Proven track record in leading diverse teams and driving product development across various sectors.	
Haritha Vendra	Utility Network Practice Lead / Senior GIS Analyst (25%)	Laguna Hills, California HQ	20+ years of experience in implementing GIS for Water/Wastewater agencies. Highly Experienced with Utility Network implementations, Vertical assets, GIS workflow development, ArcGIS Enterprise, Enterprise Geodatabases.	Managed IRWD's pilot Utility Network migration for water.
Jack Thong	Sr. Software Engineer (10 %)	Laguna Hills, California HQ	20+ years of experience in creating custom GIS solutions and web-based applications. Lead developer for DCSE/Spatial Wave's MapLibrary product.	Has integrated and provided support for IRWD's Maximo, Maplet and MapLibrary.
Max Ketabi	Supervising GIS Analyst (20%)	Laguna Hills, California HQ	9+ years of GIS experience with an extensive background in environmental planning, land development, photogrammetry, and GIS project management. Highly experienced with ArcGIS Pro and Utility Network.	Worked on the pilot Utility Network. Produced a 3D model of the Shaw Pump Station in UN.
Latha Palakur	Senior GIS Analyst (15%)	Laguna Hills, California HQ	20+ years of experience in implementing GIS for Water agencies. Highly experienced with UN Migrations, Schema Development, Scripting, Data Reviewer, Enterprise Geodatabases, Reporting, Mapping, ArcGIS Portal, and ArcGIS Online.	Worked on schema configurations & UN viewers for the Utility Network Pilot project.
Ravi Jay (Esri)	Enterprise Solutions Architect	Redlands, California (Esri HQ)	More than 20 years of experience developing, designing, and architecting solutions using ArcGIS Suite of products.	
Guru Ganesarethinam (Esri)	Principal Technical Consultant	Redlands, California (Esri HQ)	More than 29 years of experience in GIS technology with project and technical management skills. Collaborated in creating Water Asset Package for Utility Network	

Staff	Proposed Project Titles (% Time Commitment)	Location	Experience Summary	IRWD UN & Integration-related Experience
Chris Johnson	GIS Developer (10%)	Laguna Hills, California HQ	10+ years of experience working with utility agencies – highly experienced in implementing GIS Integrations.	Has worked on Web Maps, Field Mapplet, Cloud Mapplet, and Instant Apps for IRWD.
Patrick Ryan	Implementation & Support Specialist (5%)	Las Vegas, Nevada	9+ years of experience in analysis and business process evaluation, software design/architecture proven in various projects of different scales.	Has worked on IRWD's ArcGIS Enterprise Configuration.
Cameron Mortazavi	Sr. Software Engineer (10%)	Laguna Hills, California HQ	10+ years of experience developing Web-Based related applications for DCSE/Spatial Wave. Field Mapplet lead implementer.	Has integrated and provided support for IRWD's CC&B and Field Mapplet
Natalie Marcom	GIS Analyst (15%)	Laguna Hills, California HQ	2+ years of experience in GIS data editing, QC/QA, ArcGIS Online, and geostatistical analysis.	
Daniel Lopez	GIS Analyst (15%)	Porter Ranch, California	2+ years of experience in GIS data editing, QC/QA, ArcGIS Online, and geostatistical analysis.	
Thomas Shaner	GIS Analyst (15%)	Redlands, California	1+ year of experience in GIS data editing, QC/QA, ArcGIS Online, and geostatistical analysis.	
DCSE India	Off-shore GIS Technicians (40%)	Bangalore, India	20+ year of experience with GIS utility mapping, data adjustment & data conversion.	Has assisted with Schema Mapping for the pilot UN project.

Below is a concise overview of our staff's qualifications and areas of expertise. For a more comprehensive understanding of each team member's experience and specific contributions to various projects, please refer to **Appendix B – Resumes**. This appendix provides detailed resumes that delve deeply into the individual backgrounds, skill sets, and professional journeys of our project members, offering a thorough perspective on their capabilities and accomplishments. DCSE hereby makes the unequivocal commitment that, in the event of an award of a contract to DCSE, the entire project staff identified in this proposal will be fully available and dedicated to fulfilling the duties required to complete this project on time and successfully.

ALI DIBA, PH.D, P.E. [Project Manager]

Dr. Ali Diba, a seasoned architect and evangelist of Utility Network implementations at DCSE, has played a pivotal role since the early development stages of Utility Network by Esri. He has led multiple implementation projects and is experienced in integrating Asset Management and CIS/Billing Systems such as Maximo and Oracle CC&B with diverse enterprise systems. His expertise extends to GIS-centric applications using Oracle, including SDE synchronization and mobile GIS-enabled applications. With a rich experience spanning over 30 years, Dr. Diba has managed the development of GIS-based asset management systems and worked with numerous public and private agencies across the US. He has led projects for cities like Los Angeles, San Bernardino, Riverside, Anaheim, Oceanside, and San Diego. His technical proficiency encompasses GIS applications in both Microsoft Windows and Linux environments,

distributed geospatial database design, and service-oriented architecture. Dr. Diba is proficient in design and implementation of Utility Network in the water and wastewater industry. His most recent work included extending the Utility Network data model to vertical asset facilities such as treatment plants and pump stations.

Dr. Diba will be responsible for project implementation and delivery. He will oversee all aspects of the project.

MARK THACKER, B.A. [Assistant Project Manager]

Mr. Thacker is a seasoned project manager with a strong background in Agile project management and leadership across multicultural and cross-functional teams. His expertise spans large-scale project delivery, transformation of ERP products to SAAS models, and the development of teams focused on continuous improvement. With global experience in the USA, UK, Hong Kong, India, and Australia, he excels in strategic development, stakeholder engagement, risk management, and achieving results through decisive leadership and a client-centric approach.

Mr. Thacker will be responsible for supporting project planning, coordinating team communications, managing resources, assisting in identifying and mitigating risks, facilitating stakeholder communications, helping in problem-solving, and applying project management best practices, contributing to the project's overall success.

HARITHA VENDRA, P.E., GISP, M.S. [UN Practice Lead]

Ms. Haritha Vendra, with over two decades of GIS and Hydraulic Modeling expertise, has a strong background in Utility Network, GIS project management, and water & wastewater system GIS. Her credentials include a Utility Network Specialty Certification from Esri, and she has been instrumental in several Utility Network migrations. Her skillset is robust in Oracle and MS-SQL Server for back-end databases and includes comprehensive knowledge in GIS database administration, such as version management and performance optimization. Ms. Vendra's experience encompasses GIS integration projects involving Utility Billing Systems, Hydraulic Modeling, CMMS, Asset Management Systems, Document Management Systems, SCADA, and field applications.

Ms. Vendra will be responsible for Utility Network Conversion Planning and Implementation. She will participate in all the tasks, including configuring the Utility Network, deploying to test and production environments, and training. She will work closely with IRWD, and the DCSE team, to ensure smooth flow of information, and daily project progress.

LATHA PALAKUR, M.S. [Senior GIS Analyst]

Ms. Latha Palakur brings over 20 years of GIS experience, with a focus on geodatabase design, scripting/automation, application development, and Utility Network. She is well-versed in ArcGIS Desktop applications, ArcGIS Pro, Servers, Online, Portal technologies, Python, and AutoCAD. She is also instrumental in product documentation, testing, and training. Her work includes conversion/migration projects for various utilities and the development of Utility Network elements like assemblies, containers, and subnetworks, along with extensive experience in schema updates and geodatabase management.

Ms. Palakur will be responsible for Utility Network schema design, data mapping, and implementation of any reports. She will provide any support needed for integration and set up native apps and maps on ArcGIS Portal to leverage Utility Networks. She will also facilitate training – especially in branch versioning.

MAX KETABI, M.S. [Supervising GIS Analyst]

Mr. Max Ketabi's 9-year tenure as a GIS professional and FAA-certified drone pilot is marked by extensive work in environmental planning, land development, photogrammetry, and geospatial analysis. He has a keen interest in integrating Utility Networks with digital twins derived from drone imagery. His expertise extends to integrating Utility Networks with digital twins from drone imagery and ensuring data integrity using ArcGIS tools.

Mr. Ketabi will lead the data assessment and documentation process and guide a team of GIS Analysts through Utility Network migration and data cleanup. He is tasked with quality control, ensuring both pre-migration and post-migration data meet stringent standards. Additionally, Mr. Ketabi will develop internal and external dashboards and manage the implementation of 3D components for the project, including the creation of 3D models when required.

JACK THONG, B.S. [Sr. Software Engineer]

Mr. Thong has over 20 years of experience in GIS solutions, Internet GIS, Document Management, Business Automation, and Web Application Development. He is skilled in innovative design and problem-solving with strong management abilities. His expertise includes development with ColdFusion Studio, Visual Studio .NET, especially in GIS and database integration, as well as creating Windows-based applications and custom GIS applications using .NET and ESRI's toolkit. He is the lead developer for DCSE/Spatial Wave's MapLibrary product.

Mr. Thong will be responsible for UN integrations, specifically with MapLibrary, Plancheck, and Maximo.

CAMERON MORTAZAVI, B.S. [Sr. Software Engineer]

Mr. Mortazavi brings over a decade of experience in developing web-based applications, specializing in integrating Enterprise GIS systems with Computerized Maintenance Management Systems (CMMS) for DCSE and Spatial Wave. He has led implementations for notable products like Field Mapplet. He has significantly contributed to the Los Angeles Bureau of Sanitation's data management system (SANSTAR), and developed tailored data reports for Eastern Municipal Water District's mobile GIS. Additionally, he played a crucial role in upgrading IRWD's plan check system to Spatial Wave's MapLibrary, enhancing document tracking and retrieval, and developed a cloud-based application for maintaining and advancing their EGIS system.

Mr. Mortazavi will be responsible for UN integrations, specifically with Mapplet, Field Mapplet, and CC&B.

CHRIS JOHNSON B.S. [GIS Developer]

Mr. Johnson, with a decade of software development experience, specializes in creating custom solutions for municipalities. He is proficient in programming languages like Python and HTML/JavaScript and is well-versed in databases such as SQL Server and PostgreSQL. His expertise in utilizing ESRI

products for GIS web application development is notable, particularly in configuring dashboards and integrating GIS with various third-party systems. His proficiency also encompasses cloud computing and asset management tools.

Mr. Johnson will be responsible for providing integration support to our senior software engineers. He will also identify opportunities to automate the data migration, schema updates, and any workflow needing repetition throughout the project.

PATRICK RYAN B.A., B.S. [Implementation & Support Specialist]

Mr. Ryan brings over nine years of experience in technology, specializing in requirements analysis, business process evaluation, and software design. He has effectively implemented DCSE's software solutions, demonstrating proficiency in C++, Python, Java, JavaScript, and SQL, along with key technologies like Visual Studio, Linux, and .NET. Known for his strong problem-solving and mentoring skills, Mr. Ryan excels in coding, debugging, and IT infrastructure support, making him a versatile and a valuable asset in any technical team.

Mr. Ryan will be responsible for evaluating and providing recommendations for the environment, architecture, servers, and their specs for the proposed test and production environments. He will also assist with any deployments to the test and production environments.

NATALIE MARCOM, M.A. [GIS Analyst]

Ms. Marcom has 2 years of experience in geospatial and geostatistical analysis, dashboard configuration, software development, remote sensing, web mapping, and social sciences. Ms. Marcom's work at DCSE has focused on data collection, quality checking, reviewing, and processing GIS data for Utility Network. Ms. Marcom's work background in geography and scripting has built a solid foundational skillset for her use of GIS.

Ms. Marcom will be responsible for data review, data clean-up, quality checking, and GIS support.

DANIEL LOPEZ, B.S. [GIS Analyst]

Mr. Lopez is a GIS Analyst with 2 years of experience in GIS projects and software, with a keen interest in utilities and satellite imagery projects. He is skilled in ArcGIS Pro and has experience with data cleanup and addressing dirty areas within Utility Networks.

Mr. Lopez will be responsible for data review, data clean-up, quality checking, and GIS support.

THOMAS SHANER, B.A. [GIS Analyst]

Mr. Shaner is a GIS Analyst with a background in geography and GIS. He has contributed to key projects, including the IRWD's Meter to Parcel, where he enhanced landscape measurement accuracy, and the GIS Master Plan Story Map, creating an engaging summary of the district's master plan.

Mr. Shaner will be responsible for data review, data clean-up, quality checking, and GIS support.

KENYA CREER, M.A. [GIS Analyst]

Ms. Creer is proficient in GIS, with a comprehensive grasp of data maintenance, software integration, and geodatabase management. Her expertise extends to optimizing GIS workflows, evaluating spatial data, and supporting others with GIS tools and needs.

Mr. Creer will be responsible for data review, data clean-up, quality checking, and GIS support.

THOMAS SHANER, B.A. [GIS Analyst]

Mr. Shaner is a GIS Analyst with a background in geography and GIS. He has contributed to key projects, including the IRWD's Meter to Parcel, where he enhanced landscape measurement accuracy, and the GIS Master Plan Story Map, creating an engaging summary of the district's master plan.

Mr. Shaner will be responsible for data review, data clean-up, quality checking, and GIS support.

DCSE INDIA [Offshore GIS Technicians]

Our Offshore team brings 20+ years of expertise in GIS, CAD, and 3D modeling to their role as GIS/CAD Technicians for DCSE. They handle a range of tasks including the inventory of source as-builts, their conversion to GIS with detailed geometry, attributes, and linking, as well as migration from legacy GIS formats to modern schemas like the Utility Network. Their proficiency in drafting, understanding of water and wastewater systems, and experience with utility GIS projects form a solid skill base.

DCSE India, under direct supervision of our onshore team, will be responsible for data adjustment, schema preparation, data mapping and GIS support.

Esri is providing services on some of the tasks for the proposed project. The following is a summary of the staff experience, and detailed resumes have been included in **Appendix B – Resumes**.

RAVI JAY, M.SC., M.PHIL [Enterprise Solutions Architect] – Esri

Mr. Jayaraman has extensive experience architecting the integration of Spatial solutions with SAP/OMS/DMS/CIS/WMS. He has more than 20 years of experience developing, designing, and architecting solutions using ArcGIS Suite of products.

Mr. Jayaraman will be responsible for System Architecture Development.

GURU GANESARETHINAM [Principal Technical Consultant] - Esri

Mr. Ganesarethinam is a project manager and principal technical consultant in Esri's Professional Services Division. He worked on numerous data modeling and migration projects. He has completed several utility network migration projects. He also collaborated in creating Water Asset Package for Utility Network.

Mr. Ganesarethinam will be responsible for providing guidance on Data Migrations, and Utility Network Configurations.

C. EXPERIENCE

C.1. SPECIFIC UTILITY NETWORK & INTERGRATIONS EXPERIENCES

DCSE has specific domain expertise in GIS for water, wastewater, and recycled water systems - most of our clients are utility agencies. DCSE has deployed Utility Networks for similar agencies. DCSE’s qualities and core values, along with our past experiences with similar projects, will ensure that IRWD’s GIS needs for this project are fully and optimally addressed. Some of these qualities and past experiences are as follows:

- We have developed a Utility Network for **five agencies**, with more on the horizon.
- We have integrated with over **20 enterprise system vendors** across document management systems, CMMS, CCTV, Permitting, SCADA, and utility billing. Several included data synchronizations with GIS, where we set up the mapping and automated the process.
- As Esri's partner, we have followed the industry changes, beta-testing the Utility Network and related technologies. We have established ourselves as a proven leader in the Water & Wastewater GIS domain for Utility Network.
- We have supported ArcGIS enterprise integrations with asset management systems, SCADA, document management systems, customer billing systems, etc. DCSE is an engineering firm with water & wastewater expertise, so we understand the requirements of additional integrations, such as Field Mapplet, MapLibrary, and Maximo.
 - ✦ ***We are the implementers of MapLibrary, Mapplet, Field Mapplet, Maximo Integration, Mapplet in Maximo, CC&B Integration, Plancheck, and Cloud Mapplet for IRWD. With our expertise in transitioning the data source from Geometric Network to Utility Network for these systems, IRWD can trust in a seamless and successful implementation. This approach minimizes risk and ensures the project's success.***
- DCSE specializes in Utility Network deployment – this involves migrating the GIS data to the enterprise and making it accessible through the Utility Network’s service-based architecture. DCSE also has experience setting up access to Utility Network functionalities based on required privileges.

The matrix shown in **Table 4 - Recent UN Experience** provides the relevant experience summary of projects performed by DCSE in recent years. For most agencies, we have set up separate production and development environments. **Appendix C – Project Sheets** describes some of the projects listed here.




Table 4 - Recent UN Experience






Project	Business Process Assessment & Data Review	Data Migration	System Integrations	Training & Support
Irvine Ranch Water District (Utility Network – Water – Pilot Complete)	●	●	●	●
San Bernardino Municipal Water Department (Utility Network – Water & Sewer)	●	●	●	●

Project	Business Process Assessment & Data Review	Data Migration	System Integrations	Training & Support
Santa Clarita Valley Water Agency (Utility Network – Water – Vertical Assets, Horizontal Assets in Progress)	●	●	●	●
City of Long Beach (Utility Network – Recycled Water)	●	●	●	●
Elsinore Valley Municipal Water District (Utility Network – Wastewater – Pilot Complete)	●	●	●	●
City of Salem (Utility Network – Water, Sewer, Irrigation & Storm)	●			
Soquel Creek Water District (Utility Network – Water – Pilot Complete)	●	●	●	●
Moulton Niguel Water District (Utility Network – Water, Sewer, Recycled Water)	●			
Phelan Pinon Hills CSD (Utility Network – Water)	●			

Our vast and flexible team allows the client to use the right resources with the required skill set to perform the tasks. This ensures the successful completion of tasks efficiently and economically. In addition to our substantial work with our clients, we have hosted multiple webinars on Utility Network on the following topics: migration, functionality, applications, and maintenance. The QR codes below will give you access to a few of our webinar sessions on Utility Network.

Table 5 - QR Codes for Webinars Related to Utility Network

Webinar Session Topic	QR Code
Utility Network Functionalities	
Utility Network Capabilities for Water Systems: Study & Demo [Pt. 1]	
Utility Network Capabilities for Water Systems: Study & Demo [Pt. 2]	

Webinar Session Topic	QR Code
Utility Network in ArcGIS Pro Editing, Quality Control, Containment, Network Diagrams	
Utility Network on the Web Experience Builder	
Utility Network in 3D & Interactive Slice	
Public Notification and Utility Network Isolation	
GeoMerge Add-In for ArcGIS Pro to Synchronize Utility Network Data with Enterprise Systems such as CMMS/AMS	

C.2. REFERENCES

The following is a list of three (3) project references where we provided similar services within the last 5 years. We encourage IRWD to contact any or all our references listed in this section.

Table 6 - Reference – City of San Bernardino Municipal Water Department

Item	Information
Agency	City of San Bernardino Municipal Water Department
Name	Julie Abinto
Title	GIS Coordinator
Address	1350 South E Street, San Bernardino, CA 92408
Phone	(909) 522-3408
Email	julie.abinto@sbmwd.org
Project Size	Entire extent of SBMWD’s data for Water System (48,000 services, 700 miles of mains) and Sewer System (38,300 services, and 493 miles of mains)

Project Objectives & Scope	Utility Network (UN): DCSE has also recently converted their Water, Sewer, Recycled systems to UN; we are currently providing training to their staff on Utility Network. This was a comprehensive Utility Network migration. DCSE performed a detailed database readiness assessment, migrated the data to the Utility Network, and conducted thorough testing in a development environment before the final deployment in the production environment. We also created 3D digital twins of plant sites using AI-powered drone technology and incorporated them into the Utility Network system.
DCSE Team Member(s) Involved	Ali Diba (Project Management), Haritha Vendra (Utility Network Conversion Lead), Latha Palakur (Application Developments & Utility Network conversion Support), Max Ketabi (3D Modelling & Utility Network Support), Natalie Marcom (data QC), Patrick Ryan (cloud infrastructure planning for enterprise GIS – test and production)
Project(s) Cost	\$186,026
Date	2022-24

Table 7 - Reference - Santa Clarita Valley Water Agency

Item	Information
Agency	Santa Clarita Valley Water Agency (SCVWA)
Name	Cris Perez
Title	Director of Technology Services
Address	24631 Avenue Rockefeller, Valencia, CA 91355
Phone	(661) 295.6507
Email	cperez@scvwa.org
Project Size	Entire SVVWA Water System with 938 miles of pipe and 70,000 Services. The Vertical Asset Project involved data for treatment plants, pumpstations, wells, tanks, PR Stations, and Buildings. DCSE is currently working on the migration of the agency’s linear assets.
Project Objectives & Scope	Phase 1 - Development of a Utility Network data model and application to manage vertical assets. This project provided the capability to switch branched versions of Utility Network when editing data. Numerous data quality python scripting was done to prepare the vertical asset data for loading into Utility Network. Phase 2 - DCSE just started assisting SCVWA in horizontal asset migration also for the water distributions system.
DCSE Team Member(s)	Ali Diba (Project Management), Haritha Vendra (Utility Network Development & Vertical Asset Management), Max Ketabi (3D Modelling & Utility Network Support), Latha Palakur (Utility Network conversion Support), Daniel Lopez (data QC)
Project(s) Cost	\$176,390 (Phase 1 + Phase 2 total)
Date	2022-24

Table 8- Reference - Contra Costa Water District (CCWD)

Item	Information
Agency	Contra Costa Water District (CCWD)
Name	David Cao
Title	GIS Analyst
Address	1331 Concord Avenue Concord, CA 9452
Phone	(925) 688-8005
Email	dcao@ccwater.com

<p>Project Objectives & Scope</p>	<p>For more than a decade, DCSE has worked on several projects for CCWD ranging from microfiche scanning to Enterprise GIS updates.</p> <ul style="list-style-type: none"> • On-Call GIS Support: DCSE has provided on-call GIS support to the District on an as-needed basis. • DCSE is currently conducting a Utility Network Assessment for CCWD. • Migration from Oracle to SQL Server & Enterprise GIS Setup: In May 2019, DCSE assisted the District in migrating from Oracle to SQL Server for the GIS Geodatabase. Next, DCSE installed, configured, and set up an enterprise GIS environment using ArcGIS 10.6 Portal. • Treated Water GIS Data Development: In 2005, DCSE converted the District’s water system data to GIS from various formats such as as-builts and Microstation Atlas maps. The project began with a review of the District’s geodatabase design, followed by data conversion. DCSE also scanned the District’s as-built drawings and Microfiches for storage and retrieval from MapLibrary. The drawings were linked to the water mains in GIS. • Untreated Water GIS Data Development: DCSE migrated the District’s untreated water system from shapefile to Geodatabase format. The watershed data was also migrated to enterprise GIS. • Site Maps GIS Data Development: DCSE has developed site maps for CCWD using data available in different formats (CAD, as-built scans). The site maps consisted of the facilities' information in various GIS layers that conveyed a complete picture to the users.
<p>DCSE Team Member(s)</p>	<p>Ali Diba, Haritha Vendra, Max Ketabi, Latha Palakur, Natalie Marcom, Thomas Shaner, Jack Thong & Patrick Ryan</p>
<p>Project(s) Cost</p>	<p>\$1M+</p>
<p>Date</p>	<p>2005 - Present</p>

C.3. OTHER UNIQUE UN CAPABILITIES

DCSE offers several capabilities which are unique but applicable in this project. These include the following:

- DCSE’s expertise in extending Utility Network to cover Vertical Assets (i.e., pump stations, lift stations, treatment facilities, etc.)
- Modeling 3-D and Reality Capture of vertical facilities. This combined with Utility Network data model provides for a digital twin of the vertical facilities which can be viewed in Experience Builder.
- Software to Assist the Conversion and Integrations – We have several products which will be available and used during this project if called for. These products include GeoMerge and GEAR.

Appendix D – Product Sheets showcase some of our products that work with Utility Network, while the following section has brief descriptions.

C.3.1. Vertical Assets in Utility Network

Utility Network has several capabilities including support for elevation (Z values) as well as support for containers which allow for maintaining vertical facilities data in Utility Network. This feature allows for extending the Utility Network data model to cover vertical facilities.

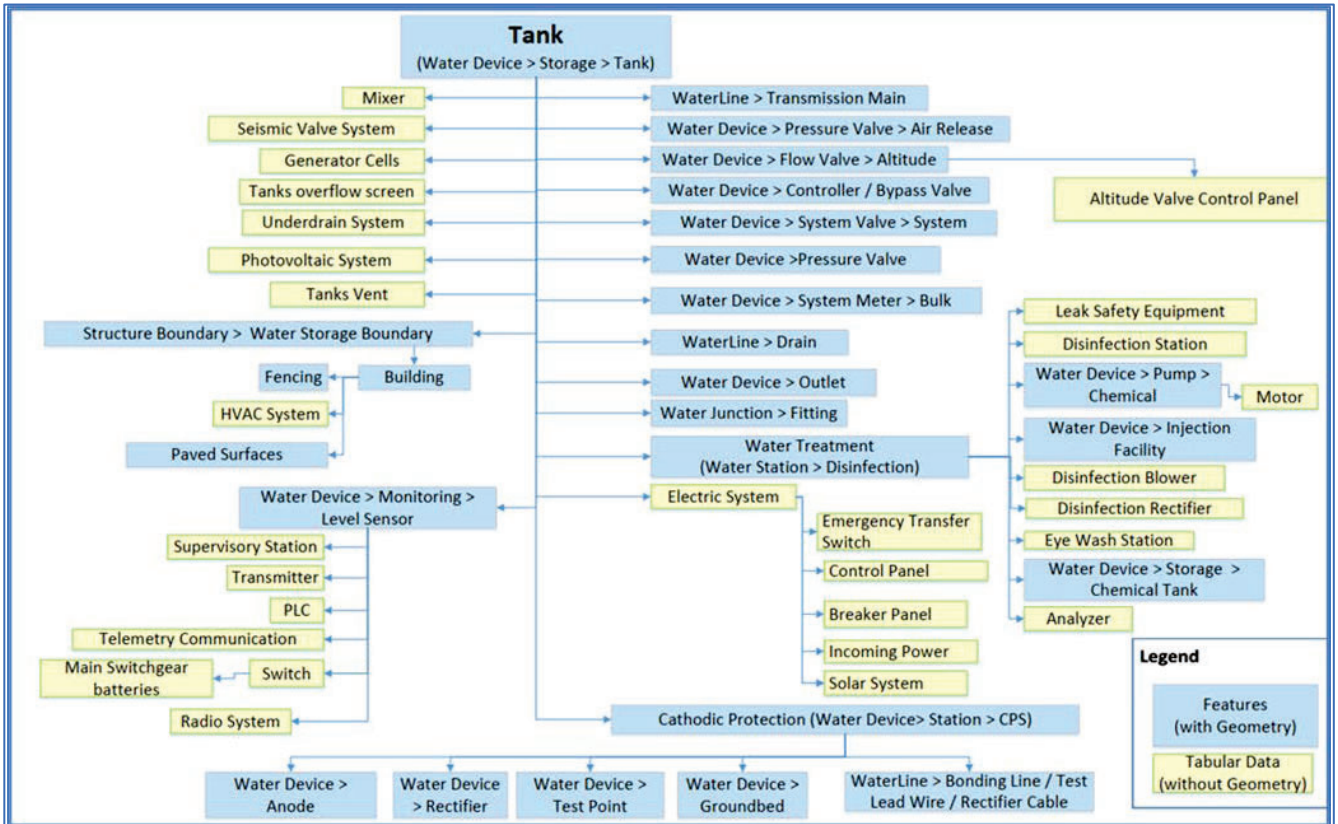


Figure 11- Extending the Utility Network Water Asset Package to Support Water Tanks

The **Figure 11** shows an example of extending the Utility Network data model to support water tanks. Yellow boxes refer to extensions implemented as tabular data which the blue boxes are Utility Network features. If interested, DCSE team can share their experience with the IRWD team in this area to develop a single system of record (i.e., Utility Network) for managing both linear and vertical assets in Utility Network.

C.3.2. Reality Capture of Vertical Facilities

One of the separating qualifications of DCSE includes the capability to create reality captures combined with Utility Network. Two examples of these capabilities are shown in **Figure 12** and **Figure 13**. This capability allows for the creation of an Experience Builder Application to edit the Utility Network data using a 3D viewer.

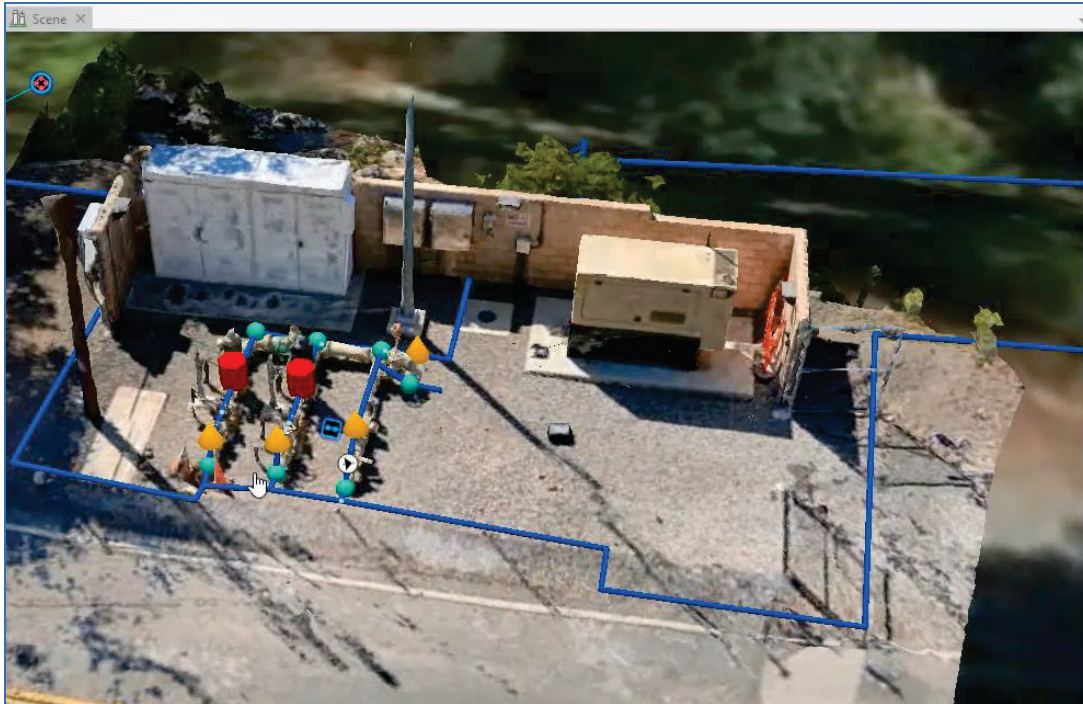


Figure 12 - Pump Station Reality Capture Combined with Utility Network

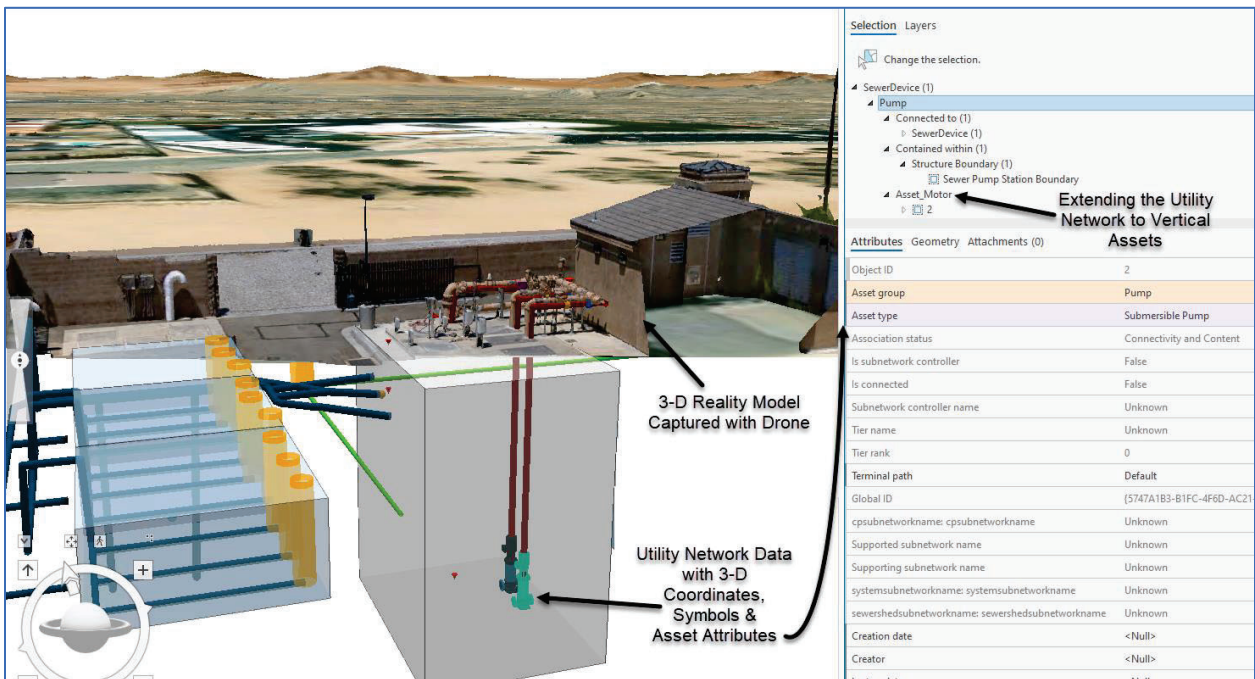


Figure 13 - Sewer Lift Station Reality Capture Combined with Utility Network

C.3.3. GeoMerge

Synchronizing data in different data sets is a challenge during the Utility Network conversion process. This challenge is aggravated due to the fact the ArcGIS Pro no longer supports editing geodatabases datasets that have Geometric Network. DCSE has developed a data synchronization tool which supports synchronizing of data between any source or destination including Utility Network, other Geodatabases,

or tabular data. [GeoMerge is listed in the ArcGIS Marketplace](#). IRWD may find this tool useful during post migration of the Utility Network. **Figure 14** below shows GeoMerge interface as an add-on to ArcGIS Pro.

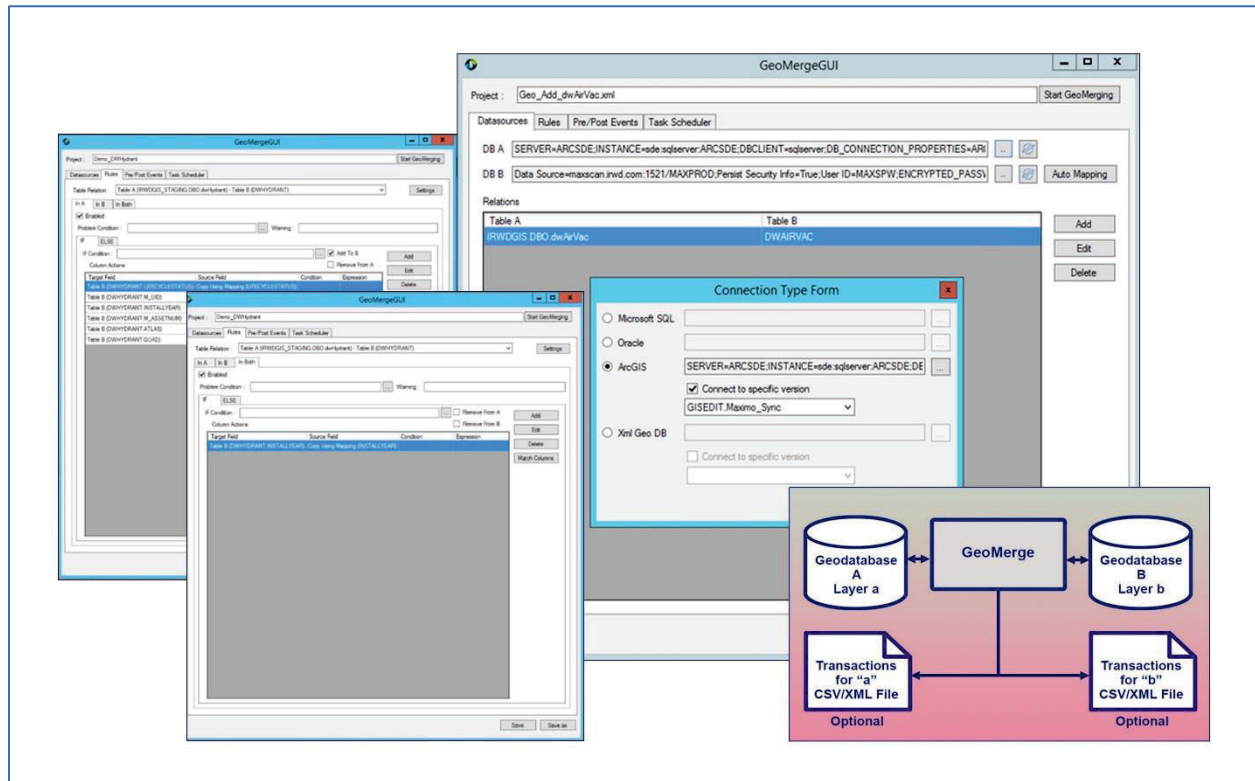


Figure 14 - GeoMerge Interface

C.3.4. GEAR

GEAR stands for GIS Enabled Asset Registry which provides a web interface to edit the Utility Network data by non-GIS users who are in charge of maintaining and managing vertical assets. GEAR connects to a branch versioned Utility Network. GEAR has the functionality to simplify the vertical asset maintenance in Utility Network to be performed by the engineering and operational supervisors that have been maintaining the vertical assets in a CMMS or spreadsheets used by operations. **Figure 15** shows the GEAR web interface. The web editing functionality of GEAR includes:

- Web enabled updating of the attribute data for a given asset.
- Web enabled replacement of an existing asset with or without geometry.
- Creation of a new asset in related UN tables.
- Visualization of the locations and the vertical assets in containers.

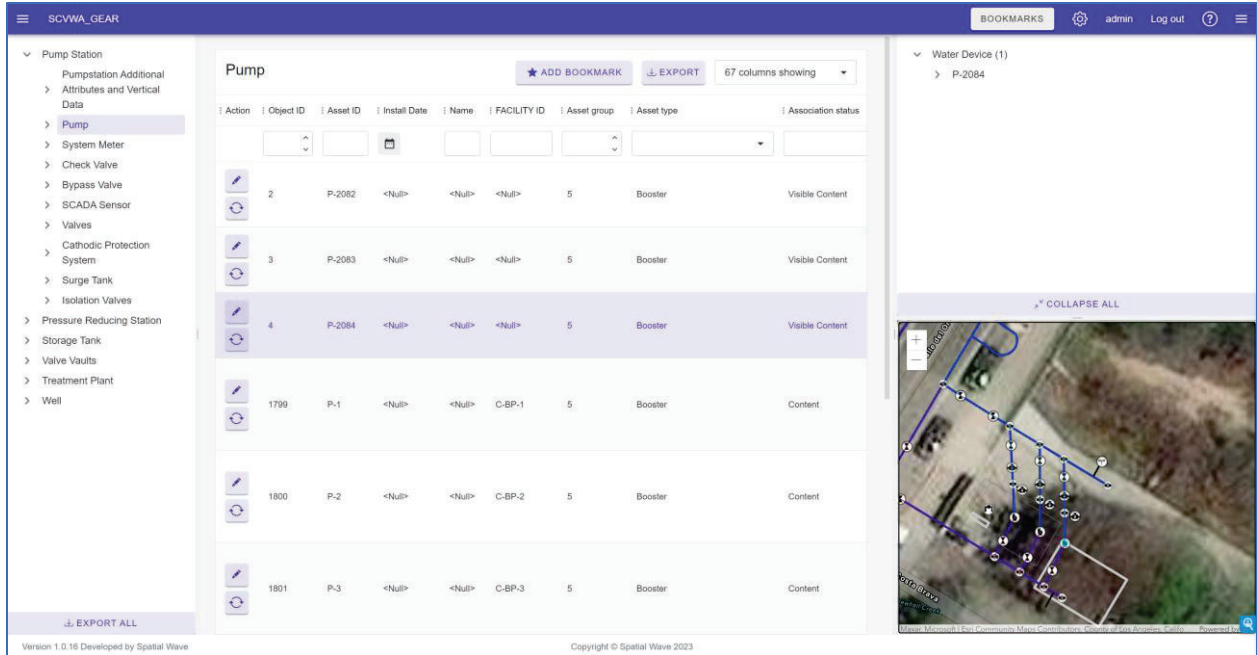


Figure 15 - GEAR Interface for Managing Vertical Assets in Utility Network

D. SCHEDULE

DCSE is providing a schedule that finishes the project within the October 2025 timeline specified in the RFP.

D.1. MILESTONE SUMMARY

The following is a summary of milestones in the schedule, in chronological order. Overall, the schedule reflects our approach of leveraging the pilot deployments for integration testing, and for training purposes. This ensures that the integrations will be ready by the time all data is migrated, and for IRWD staff to be ready with training needed well before the Go Live date.

Table 9 - Milestone Summary

Milestone #	Milestone Description	Milestone Date
1	Project Initiation & Kick off Meeting	5/1/2024
2	End of Assessment Phase	8/19/2024
3	Testing, Production Environments Ready	9/19/2024
4	Integration Requirements Complete	12/9/2024
5	End of Pilot Phase	12/9/2024
6	Training Completed	4/29/2025
7	Testing Completed	8/19/2025
8	IRWD to Freeze Edits	8/20/2025
9	Go Live on Production	9/23/2025
10	Project Completed	10/31/2025

D.2. DETAILED SCHEDULE

The DCSE Team’s staff with skillsets will perform tasks in parallel as identified in the schedule, to accomplish this project in the timeframe. The schedule is also dependent on IRWD providing all the necessary information, scheduling required meetings and training.

Freezing Edits at IRWD

The schedule also identifies the time frame at which IRWD will be testing, training, and freezing edits prior to going live. We are proposing that IRWD can continue editing existing data until just before go-live date and freeze edits for about a month (8/20/2025 to 9/23/25). During this period, DCSE will reconcile the changes that happened in the existing data with the Utility Network Data on production. From 9/23/2025, the Go Live Date for production, it is anticipated that IRWD will work on the production environment with the Utility Networks.

GANTT Chart

Figure 16 on following page has a GANTT chart shows the project schedule with milestones identified for each task. The project schedule will be discussed during the project initiation stage and confirmed with IRWD. The GANTT Chart will be used to track the progress of the project.

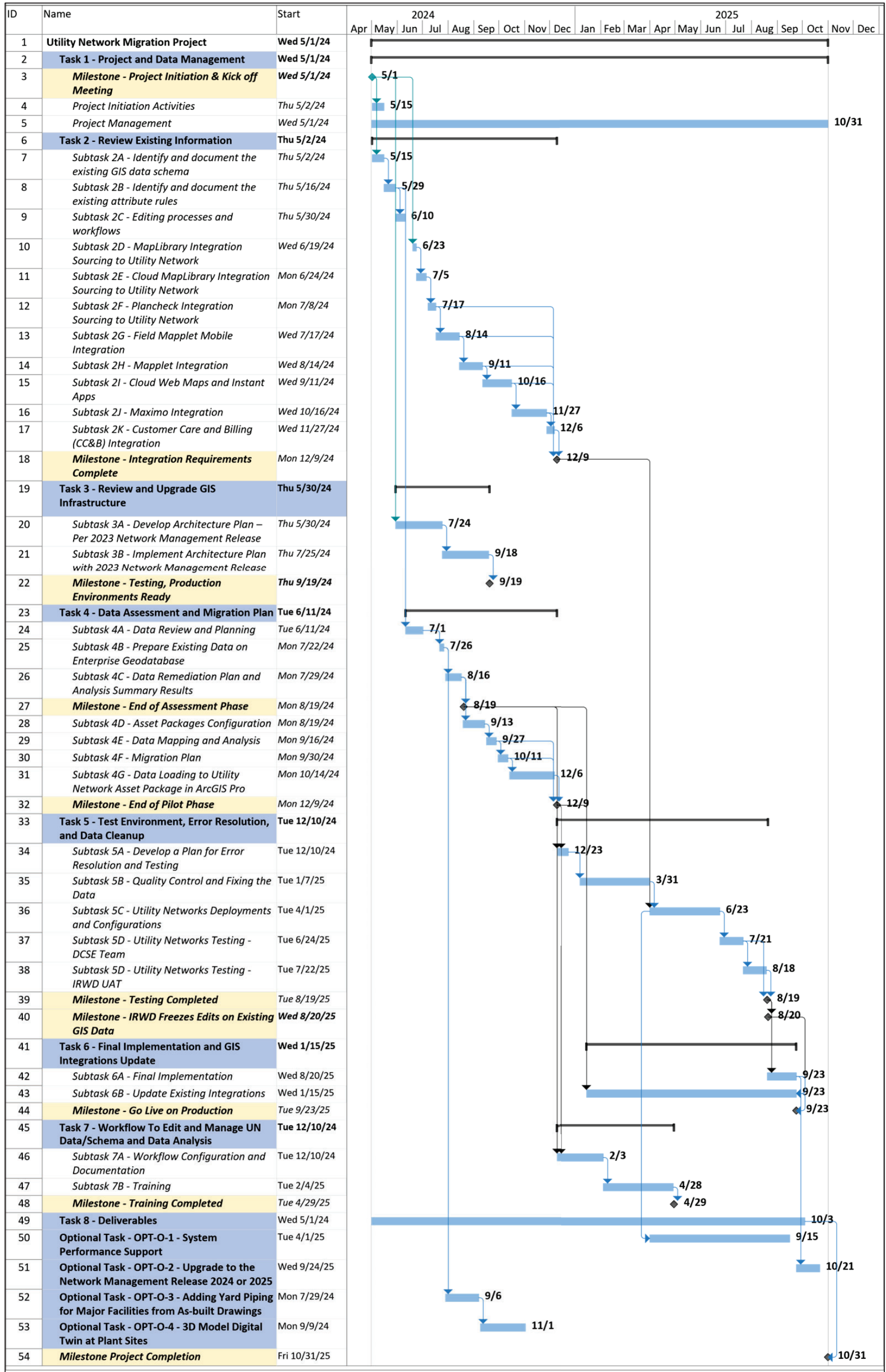


Figure 16 - Proposed Project Schedule with Milestones

B.1. BUDGET FOR REQUIRED TASKS

Please see below the table with the budget for required tasks:

Table 2 - Cost Table for Required Tasks

Task #	Task Name	Principal / Project Manager \$210/Hr.	Assist. PM \$170/Hr.	Utility Network Lead \$185/Hr.	Sr. GIS Analyst \$170/Hr.	Supervising GIS Analyst \$170/ Hr.	Implement. & Support Specialist \$155/ Hr.	Software Engineer / GIS Dev. \$170/ Hr.	GIS Analyst \$140/Hr.	DCSE India GIS Tech \$20/ Hr.	Esri Professional Services Cost*	Total Labor Hours **	Cost
1	Project and Data Management	60	120	16		40		8				244	\$44,120
2	Review Existing Information	0	0	62	54	16	0	440	40	80		692	\$105,370
2A	Identify and document the existing GIS data schema			4	4	4			16	40		68	\$5,140
2B	Identify and document the existing attribute rules			4	4	4			8	40		60	\$4,020
2C	Editing processes and workflows			8		8			16			32	\$5,080
2D	MapLibrary Integration Sourcing to Utility Network			2	2			8				12	\$2,070
2E	Cloud MapLibrary Integration Sourcing to Utility Network			2	2			40				44	\$7,510
2F	Plancheck Integration Sourcing to Utility Network			2	2			8				12	\$2,070
2G	Field Mapplet Mobile Integration			8	8			100				116	\$19,840
2H	Mapplet Integration			2	2			60				64	\$10,910
2I	Cloud Web Maps and Instant Apps			12	12			80				104	\$17,860
2J	Maximo Integration			12	12			120				144	\$24,660
2K	Customer Care and Billing (CC&B) Integration			6	6			24				36	\$6,210
3	Review and Upgrade GIS Infrastructure	8	2	44	40	40	40	16	0	0	\$ 77,000	190	\$109,680
3A	Develop Architecture Plan – Per 2023 Network Management Release Plan - System Architecture Design	4	2	4							\$ 77,000	10	\$78,920
3B	Implement Architecture Plan with 2023 Network Management Release Plan	4		40	40	40	40	16				180	\$30,760

Irvine Ranch Water District
Budget Proposal

Utility Network Migration

Task #	Task Name	Principal / Project Manager \$210/Hr.	Assist. PM \$170/Hr.	Utility Network Lead \$185/Hr.	Sr. GIS Analyst \$170/Hr.	Supervising GIS Analyst \$170/ Hr.	Implement. & Support Specialist \$155/ Hr.	Software Engineer / GIS Dev. \$170/ Hr.	GIS Analyst \$140/Hr.	DCSE India GIS Tech \$20/ Hr.	Esri Professional Services Cost*	Total Labor Hours **	Cost
4	Data Assessment and Migration Plan	10	2	104	78	88	0	0	200	620	\$ 21,000	654	\$111,300
4A	Data Review and Planning	2		16	16	16			40	120		210	\$16,820
4B	Prepare Existing Data on Enterprise Geodatabase			4	12							16	\$2,780
4C	Data Remediation Plan and Analysis Summary Results			16	6	16			24	80		142	\$11,660
4D	Asset Packages Configuration	2		16	16	16			16	120		186	\$13,460
4E	Data Mapping and Analysis			4	12				24	60		100	\$7,340
4F	Migration Plan	2		8		16			16	40	\$ 21,000	82	\$28,660
4G	Data Loading to Utility Network Asset Package in ArcGIS Pro	4	2	40	16	24			80	200		366	\$30,580
5	Test Environment, Error Resolution, and Data Cleanup	10	0	96	56	72	0	56	184	1,080		1,554	\$98,500
5A	Develop a Plan for Error Resolution and Testing	2		24	8	16		24	24	40		138	\$17,180
5B	Quality Control and Fixing the Data			16	16	24			40	600		696	\$27,360
5C	Utility Networks Deployments and Configurations	4		40	16	16		24	80	400		580	\$36,960
5D	Utility Networks Testing	4		16	16	16		8	40	40		140	\$17,000
6	Final Implementation and GIS Integrations Update	12	8	26	18	16	0	68	16	0		164	\$28,270
6A	Final Implementation	4	4	16	8	16		8	16			72	\$12,160
6B	Update Existing Integrations	8	4	10	10			60				92	\$16,110
7	Workflow To Edit and Manage UN Data/Schema and Data Analysis	12	8	80	40	80	0	0	180	400		800	\$72,280
7A	Workflow Configuration and Documentation	4	4	40	24	40			120	200		432	\$40,600
7B	Training	8	4	40	16	40			60	200		368	\$31,680

Task #	Task Name	Principal / Project Manager \$210/Hr.	Assist. PM \$170/Hr.	Utility Network Lead \$185/Hr.	Sr. GIS Analyst \$170/Hr.	Supervising GIS Analyst \$170/ Hr.	Implement. & Support Specialist \$155/ Hr.	Software Engineer / GIS Dev. \$170/ Hr.	GIS Analyst \$140/Hr.	DCSE India GIS Tech \$20/ Hr.	Esri Professional Services Cost*	Total Labor Hours **	Cost
8	Deliverables	8	8	16		40			40			112	\$18,400
	Total	120	148	444	286	392	40	588	660	2,180	\$ 98,000	4,410	\$587,920

* Esri provides the services on fixed cost basis.

**Hours do not include Esri Professional Services hours. These services only have the associated cost.

B.2. BUDGET FOR OPTIONAL TASKS

The DCSE Team has identified several optional tasks that can be beneficial for IRWD and add value to the Utility Network Implementation. Each task has been listed separately, with any applicable subtasks below.

Table 3 - Costing for Optional Tasks

Task #	Task Name	Utility Network Lead \$185/Hr.	Supervising GIS Analyst \$170/Hr.	GIS Analyst \$140/Hr.	DCSE India GIS Tech \$20/Hr.	Esri Professional Services Cost*	Labor Hours**	Cost
OPT-O-1	System Performance Support					\$ 97,000		\$97,000
OPT-O-2	Upgrade to the Network Management Release 2024 or 2025	10	32	28	0		70	\$11,210
OPT-O-3	Adding Yard Piping for Major Facilities from As-built Drawings		28	88	1,300		1,416	\$43,080
OPT-O-3.1	Adding Yard Piping for Potable Water & Recycled Water Systems***		12	40	600		652	\$19,640
OPT-O-3.2	Adding Yard Piping for Wastewater System***		16	48	700		764	\$23,440
OPT-O-4	3D Model Digital Twin at 4 Plant Sites****		76	0	100		176	\$14,920

* Esri provides the services on fixed cost basis.

**Hours do not include Esri Professional Services hours. These services only have the associated cost.

***Assuming 200 Plant as-built sheets for each system

****Contiguous outdoor areas larger than 8,000 sqft and indoor areas larger than 5,000 sqft need to be assessed on a case-by-case basis. Outdoor areas are not within restricted airspace. DCSE will assess each site before the data gathering phase.

Exhibit "C"



**GIS UTILITY NETWORK MIGRATION
CONSULTANT SELECTION**



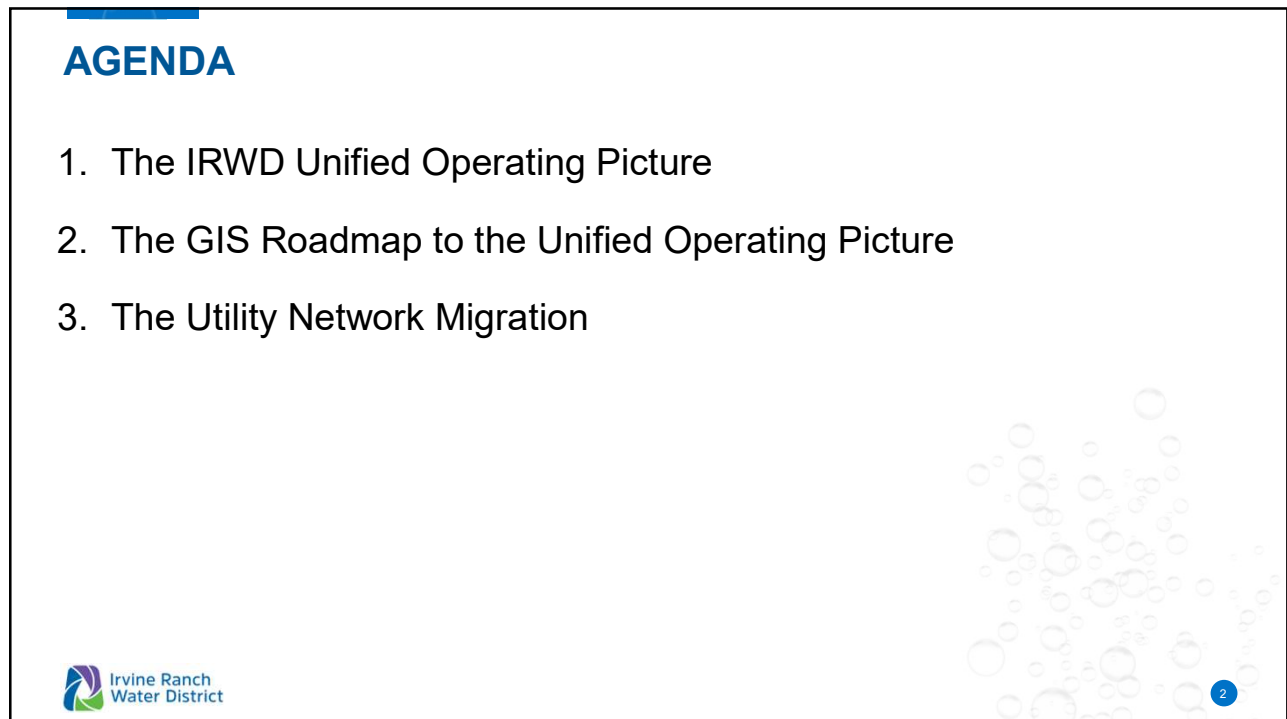
**Irvine Ranch
Water District**

**ENGINEERING AND OPERATIONS COMMITTEE
APRIL 16, 2024**




Irvine Ranch
Water District

1




AGENDA

1. The IRWD Unified Operating Picture
2. The GIS Roadmap to the Unified Operating Picture
3. The Utility Network Migration

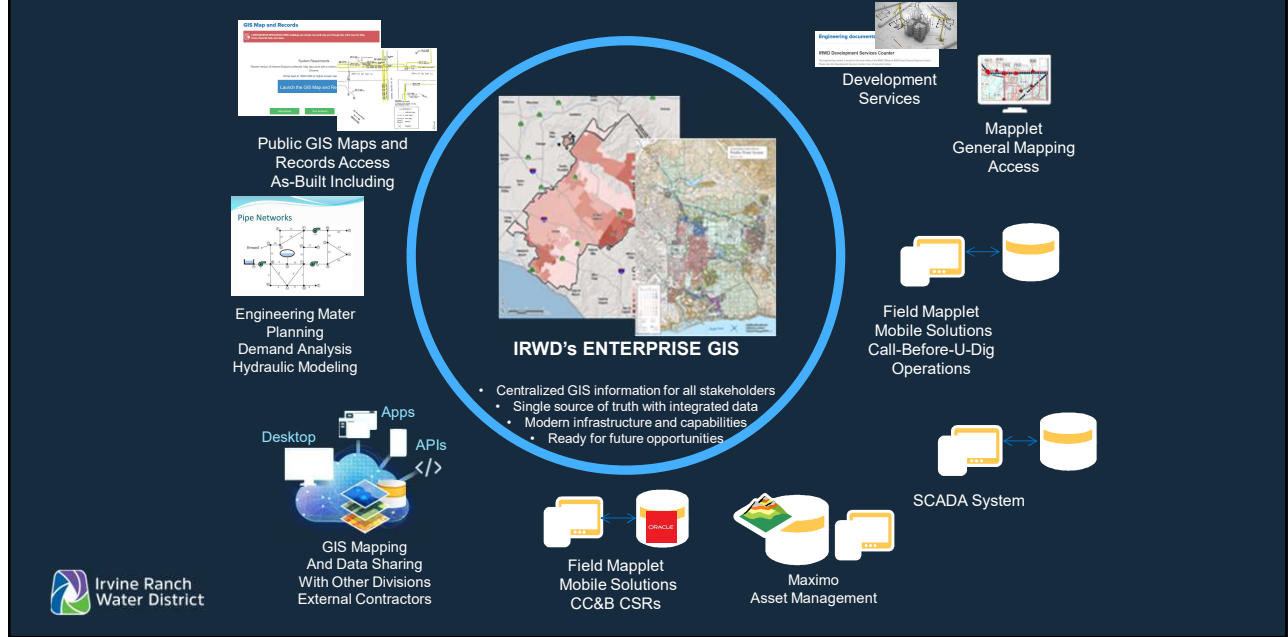


Irvine Ranch
Water District

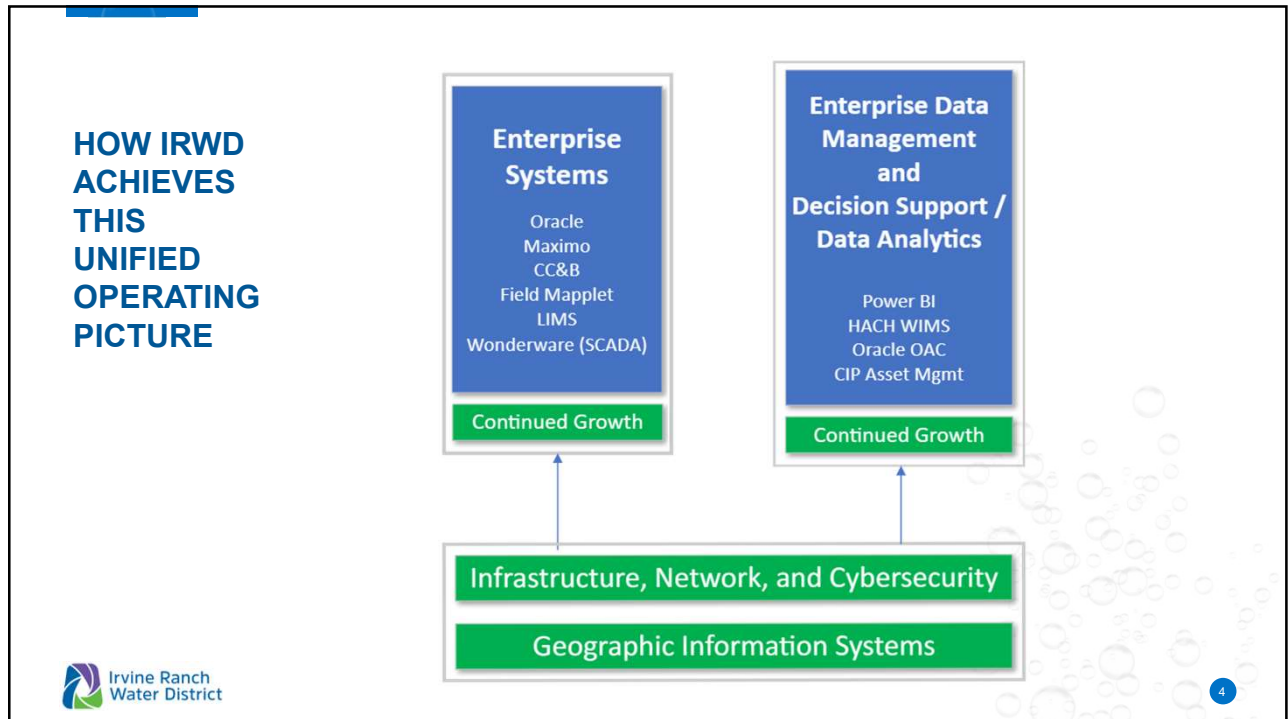


2

What is a Unified Operating Picture?



3



4

GIS At IRWD Today

Spatial Analysis

- Conservation
- NTS
- Water Banking
- Finance



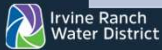
GIS Enabled Field Solutions (100+ Users)

- CC&B
- Water Loss Prevention
- USA
- Collections
- Construction Services
- Engineering
- Water Use Efficiency
- Redline corrections



GIS Enabled Office/Web Solution

- Conservation
- Asset Management
- Development Services
- Customer Services
- Recycled
- Engineering – Meter Data
- Public



5

GIS ROADMAP TO THE UNIFIED OPERATING PICTURE

Execute Enterprise License Agreement



Update existing District-wide mobile and mapping solutions



Integrate GIS Master Plan into Data and Tech Working Group



Migrate from Geometric Network to Utility Network

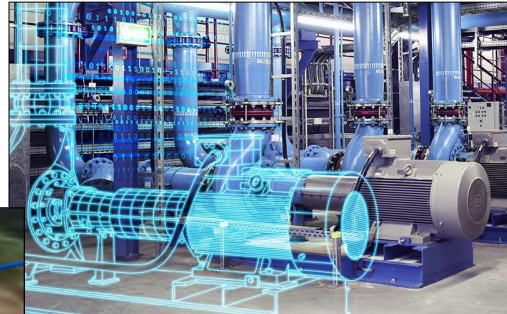


6

6

UTILITY NETWORK MIGRATION

- Major conversion that supports digital twin technologies, vertical assets
- Move from 2D to 3D asset information, network tracing, and subnetworks

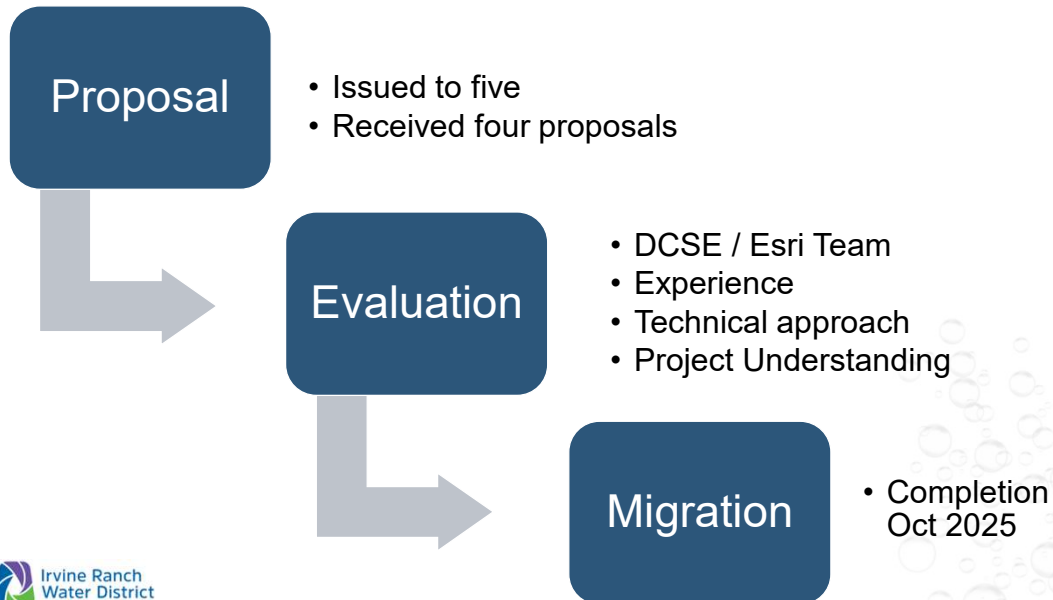


IRWD Enterprise Systems:
Maximo
CC&B
Field Mapper
Dam Safety Inspection
Interactive Mapping Solution

7

7

IMPLEMENTATION PROCESS



8

8

RECOMMENDATION

That the Board authorize the General Manager to execute a Professional Services Agreement with DCSE in the amount of \$599,130 for the Utility Network Migration, Project 11782.

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