TOWN OF QUEEN CREEK ARIZONA

Update on Reclaimed Water Corridor Study – *Final Report*

Tom Condit
Development Services Director

Paul Gardner
Utilities Director

May 18, 2011

Overview

- Greenfield Water Reclamation Plant in operation since 2007
- Partnership between Mesa, Gilbert, and Queen Creek
- 4 million gallons per day (MGD) treatment capacity available; approximately 1.2 MGD presently treated daily
- After treatment, class “A+” reclaimed water available for reuse (recharge, irrigation – turf or crops, cooling towers)
- Queen Creek’s reclaimed water is presently being utilized by Mesa and Gilbert with no direct benefit to Queen Creek

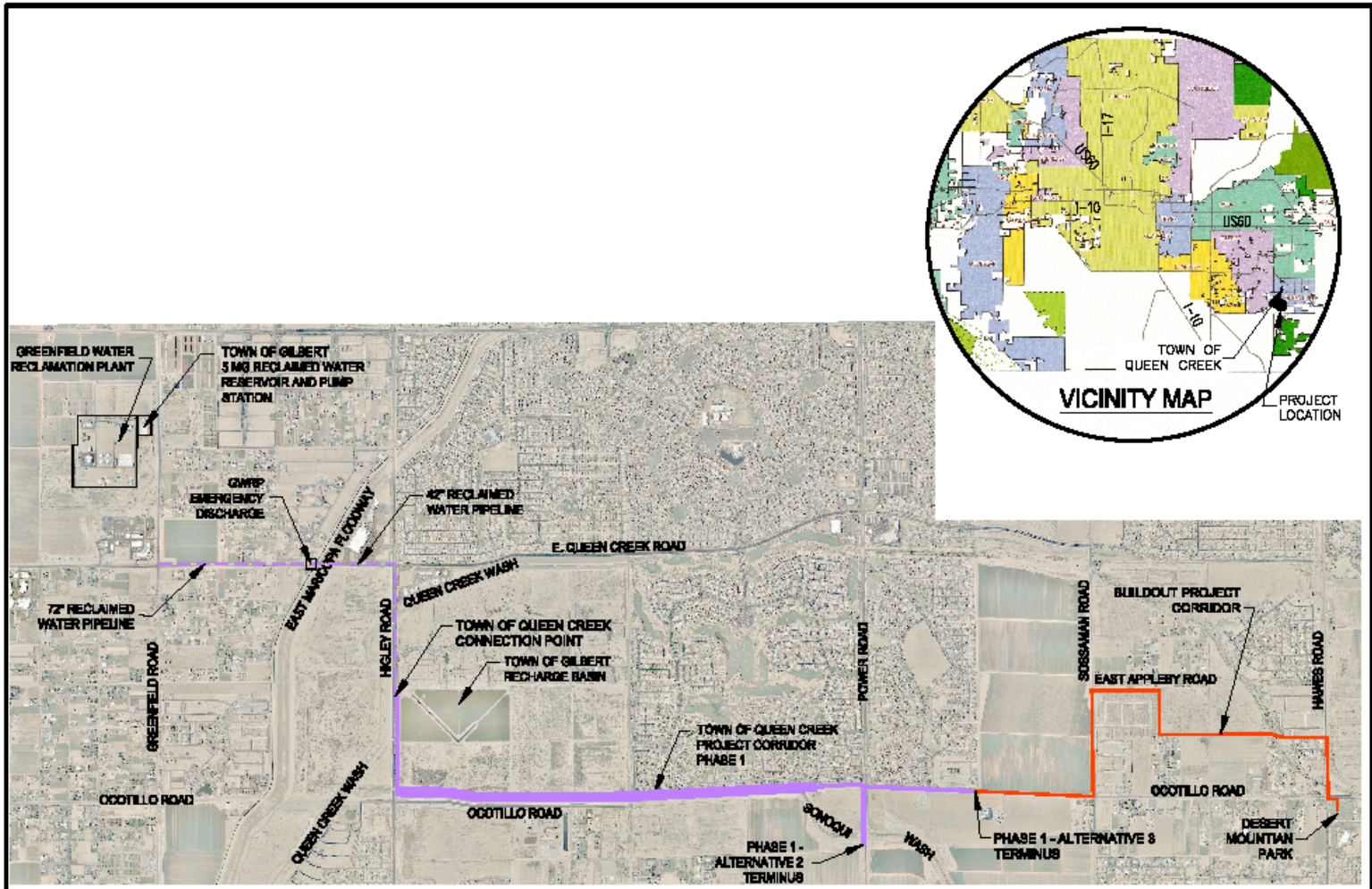
Greenfield Water Reclamation Plant

Overview

- IGA with Gilbert and Mesa requires Queen Creek to make beneficial use of our reclaimed water prior to the next wastewater plant expansion (no earlier than 2019)
- Reclaimed water is a valuable commodity and can be used to obtain recharge credits, sold to other agencies, used for landscape irrigation, or sold to agricultural users
- First reclaimed water study by LAN in 2007; phased implementation and $21.4M cost
- Stantec Report (May 2011) defines a corridor for Phase I and provides additional recommendations for future improvements

Project Features

- Connection at Gilbert Recharge Basin
- 24-inch PVC pipeline (3 miles)
- Potential sites for storage tank and pump station
- 2 million gallon storage tank / pump station
- Discharge Location (Phase 1)
- Recharge / Reuse Options
- Ultimate Configuration



LEGEND

- EXISTING RECLAIMED WATER PIPELINE
- PROJECT CORRIDOR
- BUILDOUT PROJECT CORRIDOR

N

NOT TO SCALE

TOWN OF QUEEN CREEK

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

TOWN OF QUEEN CREEK
RECLAIMED, REUSE & RECHARGE WATER LINE - PHASE I

PRELIMINARY ENGINEERING REPORT

Queen Creek, Arizona

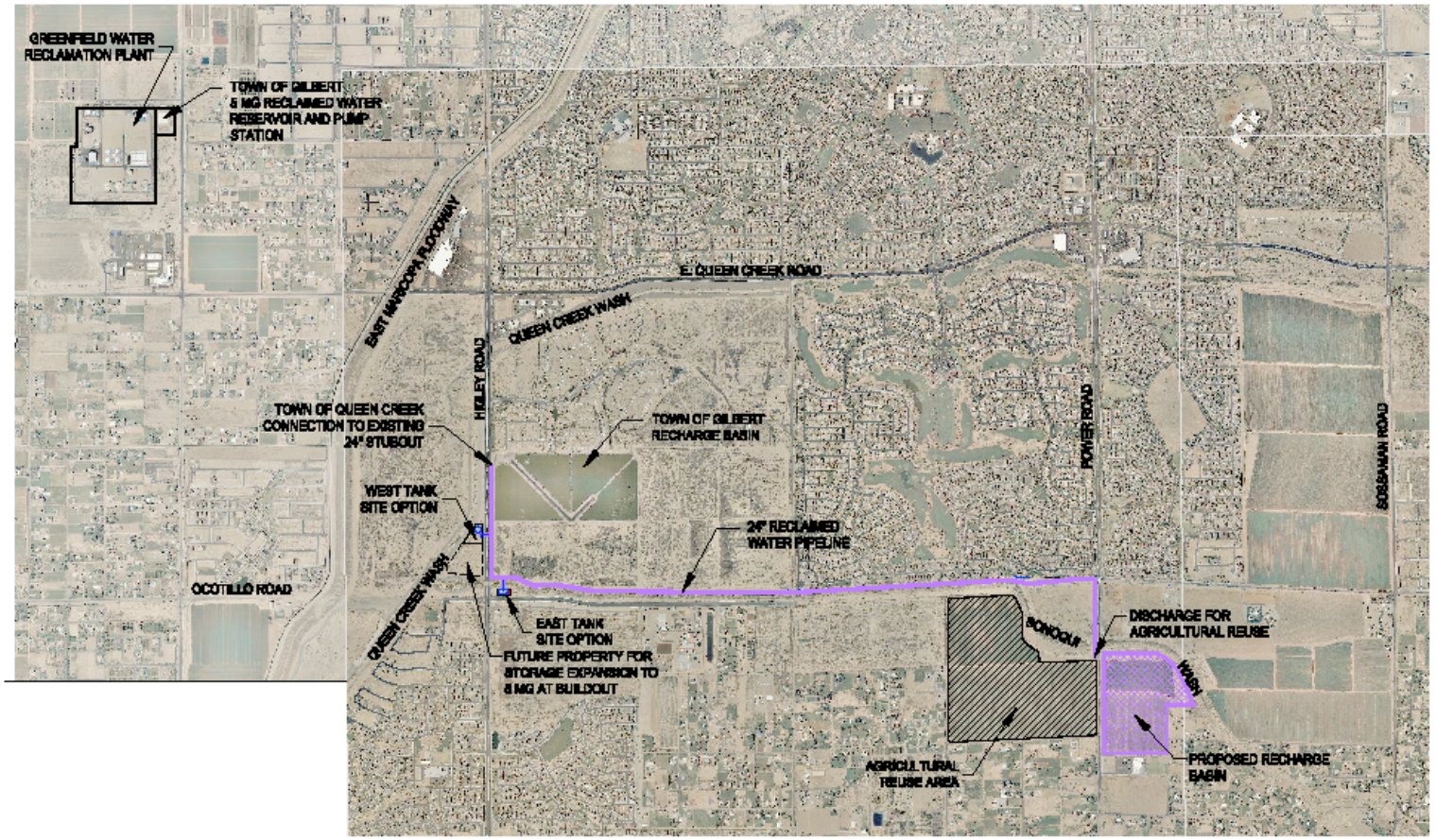
RECLAIMED WATER PROJECT
PHASE 1 PROJECT LOCATION
AND PLANNING AREA MAP

Figure 1-1

Project Alternatives

- No Action
- 2.5-mile pipeline (ends at Power)
- 3.0-mile pipeline (ends at 188th Street)

Future, Ultimate Build-Out Configuration



LEGEND

- PROPOSED 24" RECLAIMED WATER PIPELINE
- AGRICULTURAL REUSE AREA
- PROPOSED RECHARGE BASIN

N

NOT TO SCALE

TOWN OF QUEEN CREEK

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

TOWN OF QUEEN CREEK
RECLAIMED, REUSE & RECHARGE WATER LINES - PHASE 1

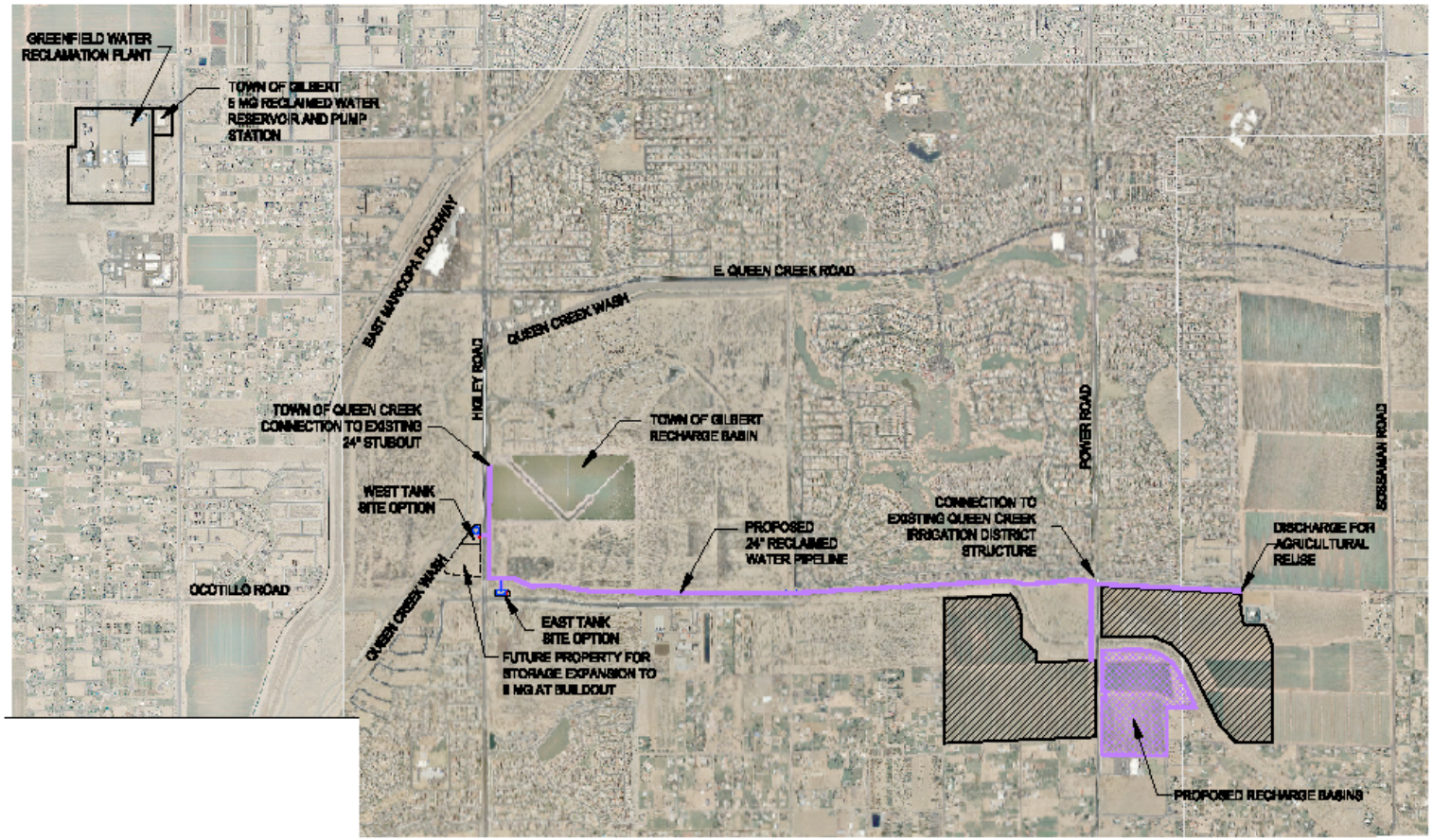
PRELIMINARY ENGINEERING REPORT

Queen Creek, Arizona

ALTERNATIVE 2 - RESERVOIR, PUMP STATION AND 2.5 MILE REUSE WATERLINE

Figure 5-1

0



LEGEND

- PROPOSED 24" RECLAIMED WATER PIPELINE
- AGRICULTURAL REUSE AREA (APPROX 240 AC)
- PROPOSED RECHARGE BASIN

N

NOT TO SCALE

TOWN OF QUEEN CREEK

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

TOWN OF QUEEN CREEK
RECLAIMED, REUSE & RECHARGE WATER LINE - PHASE 1

PRELIMINARY ENGINEERING REPORT

Queen Creek, Arizona

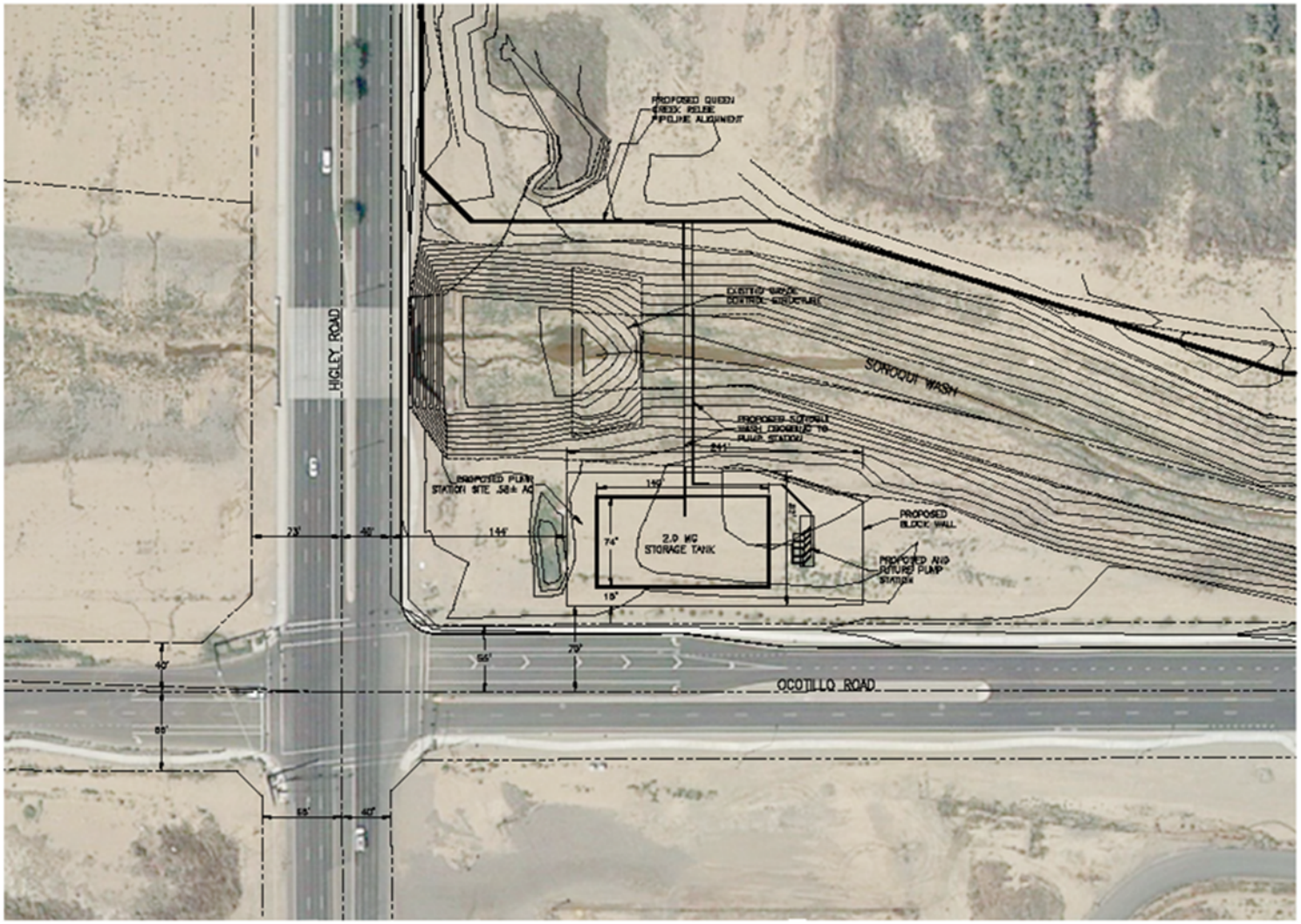
ALTERNATIVE 3 - RESERVOIR, PUMP STATION AND 3.0 MILE REUSE WATERLINE

Figure 5-4

0

Storage / Pump Station Alternatives

- NE corner of Ocotillo and Higley Road
- North of Ocotillo, west side of Higley Road
- Phase I: 2 MG storage + booster station sized for future build-out
- Will require additional storage capacity once the Town exceeds 2 MGD wastewater treatment



N

40 0 40 80

SCALE OF FEET

TOWN OF QUEEN CREEK

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

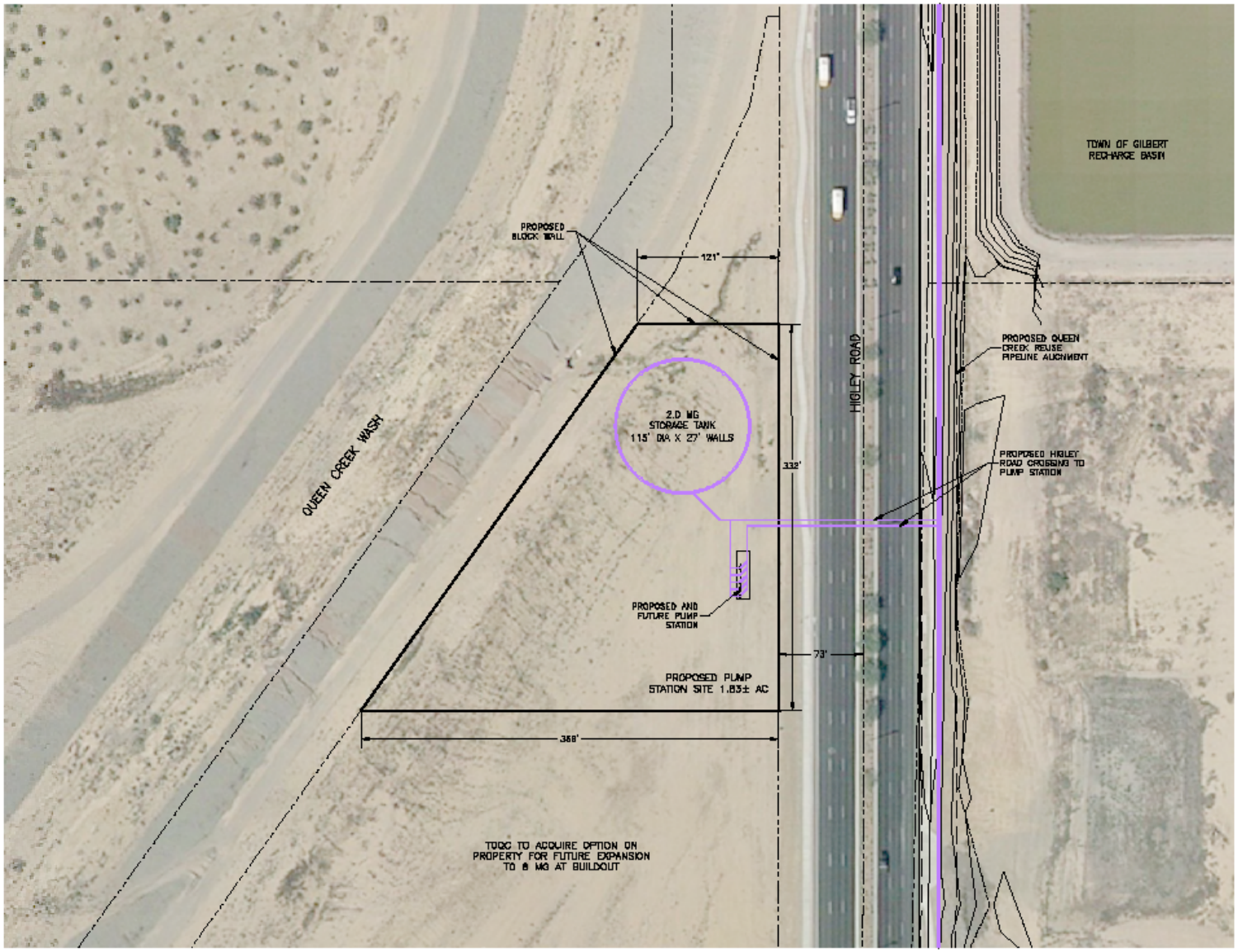
TOWN OF QUEEN CREEK
RECLAIMED, RELIEF & RECHARGE PIPELINE - PHASE 1

PRELIMINARY ENGINEERING REPORT

Queen Creek, Arizona

EAST TANK SITE LAYOUT

Figure 6-1 1 of 1 0



N

40 0 40 80

SCALE OF FEET

TOWN OF
QUEEN CREEK

Stantec

PRELIMINARY
NOT FOR CONSTRUCTION
OR RECORDING

TOWN OF QUEEN CREEK
RECLAIMED, REUSE & RECHARGE FACILITIES - PHASE 1

PRELIMINARY ENGINEERING REPORT

Queen Creek, Arizona

WEST TANK SITE LAYOUT

Project No. 193302148

Scale 1"=40' HOR

Figure 6-2 1 of 1

0

Cost Estimates

- No Action Alternative – Town will still be responsible for capital costs; Mesa would construct the improvements and bill Queen Creek for them
- 2.5 Mile Pipeline Alternative
  - $8,532,000
- 3 Mile Pipeline Alternative
  - $9,200,000

TOWN OF QUEEN CREEK

Reclaimed, Reuse and Recharge Pipeline Phase 1

Alternate 2 Opinion of Probable Construction Cost

Stantec

PROPOSED PROJECT

BASE ITEMS - PIPELINE, PUMP STATION and STORAGE TANK					
1.1	24-Inch PVC C905 DR18	13,500	LF	$ 140	$ 1,890,000
2.1	Metering Station and Connection at Higley Road	1	EA	$ 20,000	$ 20,000
3.1	Discharge Metering Structure at Sossaman Farms	1	EA	$ 15,000	$ 15,000
4.1	Electrical Construction, Service, RTU & SCADA	1	LS	$ 200,000	$ 200,000
5.1	Pump Station	1	LS	$ 750,000	$ 850,000
6.1	2 MG Partially Buried Storage Tank	1	LS	$ 1,100,000	$ 1,100,000
7.1	Land Acquisition - Pump Station and Storage Tank	1	LS	$ 450,000	$ 450,000
	Subtotal Pipeline, Pump Station and Storage Tank				**$ 4,525,000**
SELECTED RECHARGE OPTION - RECHARGE BASIN (Recharge Credit - Evaporation, Transpiration, etc.)					
A.1	Basin - Excavation, Flow Control Structure, Turnout Structure, Perimeter Fence, Dechlorination, Metering, Electrical, Clearing	37	AC	$ 35,000	$ 1,295,000
A.2	Land Acquisition - Access Road and Basin Site	37	AC	$ 5,000	$ 185,000
	Subtotal Option A - Recharge Basin				**$ 1,480,000**
INDIRECT COSTS					
I.1	Engineering (Des. and PM - 15% of Construction)	1	LS	$900,750	$ 900,750
I.2	Permitting	1	LS	$125,000	$ 125,000
I.3	Contingency (25% of Construction Costs)	1	LS	$ 1,501,250	$ 1,501,250
	Subtotal Indirect Costs				**$2,527,000**
TOTAL PROJECT					
P.1	Pipeline, Pump Station and Storage Tank	1	LS		$ 4,525,000
P.2	Option A - Recharge Basin	1	LS		$ 1,480,000
P.3	Indirect Costs (Including 25% Contingency)	1	LS		$ 2,527,000
	TOTAL ESTIMATED COST ALTERNATE 2				**$ 8,532,000**

ALTERNATE RECHARGE OPTIONS

OPTION B - VADOSE ZONE WELLS					
B.1	Vadose Zone Wells w/Meter (250 GPM)	6	EA	$ 250,000	$ 1,500,000
	Subtotal Option B - Vadose Zone Wells				**$ 1,500,000**

OPTION C - MANAGED UNDERGROUND STORAGE FACILITY (Wash Recharge) (Recharge Credit - Losses and 50% Cut to Aquifer)					
C.1	Discharge Facilities and Monitoring/Meter Structure at Wash - Includes Piping and Wash Improvements	1	LS	$ 200,000	$ 200,000
C.2	Dechlorination Structure	1	LS	$ 20,000	$ 20,000
	Subtotal Option C - Managed USF				**$ 220,000**

OPTION D - INJECTION/ASR WELLS					
D.1	Injection/ASR Wells w/Meter	2	LS	$ 850,000	$ 1,700,000
	Subtotal Option D - Injection/ASR Wells				**$ 1,700,000**

TOWN OF QUEEN CREEK

Reclaimed, Reuse and Recharge Pipeline Phase 1

Alternate 3 Opinion of Probable Construction Cost

Stantec

PROPOSED PROJECT

BASE ITEMS - PIPELINE, PUMP STATION and STORAGE TANK					
1.1	24-Inch PVC C905 DR18	16,500	LF	$ 140	$ 2,310,000
2.1	Metering Station and Connection at Higley Road	1	EA	$ 20,000	$ 20,000
3.1	Discharge Metering Structure at Sossaman Farms	1	EA	$ 15,000	$ 15,000
4.1	Electrical Construction, Service, RTU & SCADA	1	LS	$ 200,000	$ 200,000
5.1	Pump Station	1	LS	$ 750,000	$ 850,000
6.1	2 MG Partially Buried Storage Tank	1	LS	$ 1,100,000	$ 1,100,000
7.1	Land Acquisition - Pump Station and Storage Tank	1	LS	$ 450,000	$ 450,000
	Subtotal Pipeline, Pump Station and Storage Tank				**$ 4,945,000**
SELECTED RECHARGE OPTION - RECHARGE BASIN (Recharge Credit - Evaporation, Transpiration, etc.)					
A.1	Basin - Excavation, Flow Control Structure, Turnout Structure, Perimeter Fence, Dechlorination, Metering, Electrical, Clearing	37	AC	$ 35,000	$ 1,295,000
A.2	Land Acquisition - Access Road and Basin Site	37	AC	$ 5,000	$ 185,000
	Subtotal Option A - Recharge Basin				**$ 1,480,000**
INDIRECT COSTS					
I.1	Engineering & Town Admin. (15% of Construction)	1	LS	$963,750	$ 963,750
I.2	Permitting	1	LS	$125,000	$ 125,000
I.3	Contingency (25% of Construction Costs)	1	LS	$ 1,606,250	$ 1,606,250
	Subtotal Indirect Costs				**$2,695,000**
TOTAL PROJECT					
P.1	Pipeline, Pump Station and Storage Tank	1	LS		$ 4,945,000
P.2	Option A - Recharge Basin	1	LS		$ 1,480,000
P.3	Indirect Costs (Including 25% Contingency)	1	LS		$ 2,695,000
	TOTAL ESTIMATED COST ALTERNATE 3				**$ 9,120,000**

ALTERNATE RECHARGE OPTIONS

OPTION B - VADOSE ZONE WELLS					
B.1	Vadose Zone Wells w/Meter (250 GPM)	6	EA	$ 250,000	$ 1,500,000
	Subtotal Option B - Vadose Zone Wells				**$ 1,500,000**

OPTION C - MANAGED UNDERGROUND STORAGE FACILITY (Wash Recharge) (Recharge Credit - Losses and 50% Cut to Aquifer)					
C.1	Discharge Facilities and Monitoring/Meter Structure at Wash - Includes Piping and Wash Improvements	1	LS	$ 200,000	$ 200,000
C.2	Dechlorination Structure	1	LS	$ 20,000	$ 20,000
	Subtotal Option C - Managed USF				**$ 220,000**

OPTION D - INJECTION/ASR WELLS					
D.1	Injection/ASR Wells w/Meter	2	LS	$ 850,000	$ 1,700,000
	Subtotal Option D - Injection/ASR Wells				**$ 1,700,000**

Recommendations

1. Staff concurs with consultant recommendation for 3-mile pipeline alternative;
2. Continue seeking various grant funding and partnering opportunities;
3. Include in upcoming Development Fee Study for inclusion in that program;
4. Continue dialogue with various agencies on joint-use arrangements, including beneficial reuse on farmland

Questions / Comments ?