

Program Management

New Water Reclamation Campus Location Report

**Pima County Regional Wastewater Reclamation Department
Tucson, Arizona**

February 2008

New Water Reclamation Campus Location Alternatives

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- Pima County Cultural Resources & Historic Preservation
- Pima County Natural Resources, Parks and Recreation Department
- Pima County Regional Flood Control District
- Tucson Water

New Water Reclamation Campus Location Alternatives

1. Background

As an outcome of the Regional Optimization Master Plan (ROMP) activities for the Pima County Regional Wastewater Reclamation Department (PCRWRD), new wastewater treatment facilities are to be constructed in the vicinity of the existing Roger Road Wastewater Reclamation Facility (WRF). The new facilities are to be constructed while existing facilities continue to serve the County. In examining potential sites for the new facilities, PCRWRD determined that others need to have input in the final site decision. The other stakeholders of the alternative site locations were contacted and meetings scheduled to gather information of their specific interests and concerns. Their issues and concerns are factored into the determination of the final site selection.

The Roger Road WRF is the older of the two major treatment facilities serving Tucson and the surrounding communities, and is located at 2600 W. Sweetwater Drive, Tucson, Arizona 85705. The current permitted capacity of the plant is 41-mgd and was first operated in 1951 as a 12-mgd activated sludge facility. Expansion occurred with a separate 13-mgd trickling filter facility in 1960 and a 13-mgd activated sludge/contact stabilization facility in 1967. In 1979 the facility was consolidated into a single facility with new two, 165-foot diameter by 26-foot deep, plastic media biofilters with return activated sludge capability. The existing facility also includes a sludge processing complex of sufficient size to support the facilities operation.

The existing facilities occupy 48 acres of a 105 acre land parcel owned by Pima County. An aerial view of the existing Roger Road WRF is shown in **Figure 1-1**.

Figure 1-1
Existing Roger Road WRF



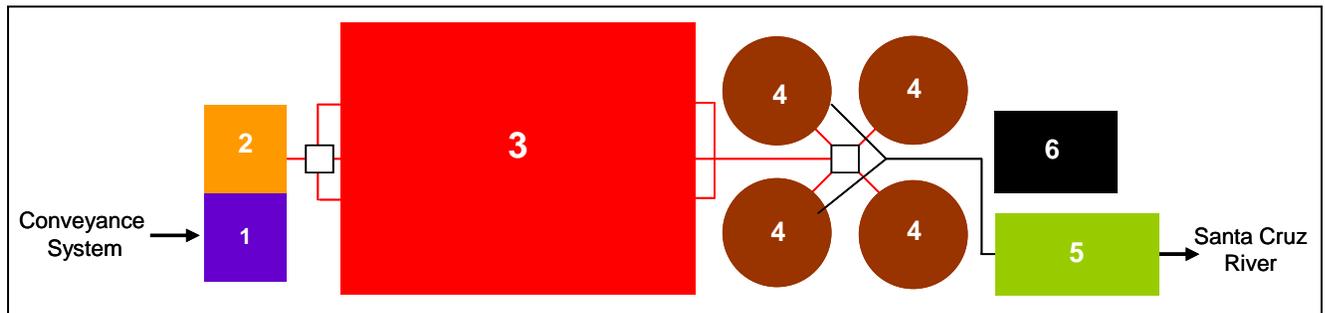
New Water Reclamation Campus Location Alternatives

Due to a number of risks, including age of facilities, adaptability to modern wastewater treatment technology to meet stringent regulatory requirements and concerns about meeting the requested schedule, the ROMP study recommended to construct a 32 mgd new Water Reclamation Campus (WRC) to replace the existing facility. The existing facility must remain in operation until the new WRC is placed into service. Flow will then be routed to the new facility and the current existing facility will be decommissioned and later demolished.

The recommended plan for the new WRC is to construct new facilities with advanced wastewater treatment technology on County owned property adjoining the existing plant. Along with other improvements at the Ina Road WRF, a centralized sludge processing operation will be constructed, which will process sludge generated from the new Water Reclamation Campus. In addition, the plan is to construct new facilities without primary sedimentation tanks. Therefore, the footprint, or land area, occupied by the new treatment works facilities will be far less than the existing facilities and is estimated to be approximately 18 acres. This reduced future land area provides opportunity for alternative uses for the remaining County land not occupied by the new WRC.

A schematic process diagram of the new treatment works systems is shown in **Figure 1-2**.

**Figure 1-2
New WRC Process Diagram**



<p>Legend:</p> <ol style="list-style-type: none"> 1. Headworks (Influent PS, Screens) 2. Grit Removal Facility 3. Bardenpho Aeration Tanks 4. Final Clarifiers 5. Disinfection Facilities 6. Sludge Thickening/Transfer Facility
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2. Potential Site Locations

There are three potential locations for the site of the new WRC on the existing County owned land. Other potential sites would be some variations to these three general site locations. Each of these will allow the existing facility to continue operation while new facilities are constructed. The following describes the general location and some related issues for each of the potential sites.

- Northwest of Existing Plant (adjacent to Santa Cruz River)
- North of Existing Plant (adjacent to Santa Cruz River)

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- North of Sweetwater Drive (south of existing plant)

Northwest of Existing Plant (Alternative A)

In prior years the Roger Road WRF included the operation of sludge lagoons which were located in the Northwest corner of the existing County owned property. These lagoons have been decommissioned and that area is available for the construction of the new WRC. The area for the new facilities would be bounded by the Santa Cruz River on the West, County property boundaries on the north and east sides, and would extend as far south on County property as required. The new plant outfall would be located as far south as the hydraulics would permit to extend the associated riparian habitat as far as practicable. This location meets the regulatory requirements for 350-foot setbacks using City of Tucson owned land.

North of Existing Plant (Alternative B)

Since this facility will be constructed while the existing Roger Road WRF remains in active operation, boundaries of the new facilities are the existing sludge processing facilities on the south, chlorine contact basins and property boundary on the east and the Santa Cruz River on the west. The north boundary would be extended as far as required. The facility would be constructed over the existing stormwater retention basins and deactivated sludge drying beds, and aligned along the Santa Cruz River. This alternative would utilize the existing outfall location. This location meets the regulatory requirements for 350-foot setbacks using City of Tucson owned land.

North of Sweetwater Drive (Alternative C)

At the existing Roger Road WRF there is a “green space” on the south side of the existing plant that is available to locate a new facility to treat 32-mgd of wastewater. Currently this area serves as the front entrance to the existing plant and serves as a site buffer from the plant access road. The location along Sweetwater Drive meets the regulatory requirements for 350-foot setbacks using City of Tucson owned land.

The three potential site locations with a footprint for future expansion (beyond the year 2030) as they relate to the existing treatment works at Roger Road are shown on **Figure 2-1**

New Water Reclamation Campus Location Alternatives

Figure 2-1
Three Alternative WRC Site Locations



New Water Reclamation Campus Location Alternatives

3. Issues of Concern

Each of the three alternative locations described above have their benefits and challenges that must be considered before selecting the optimal site. For example, constructing the new facilities in the Northwest corner of the County property (Alternative A) would have least impact of the alternatives on existing operations, but the area would require significant fill to raise the surface elevations above possible flood stage grades. Also, this site would involve long pipe runs to deliver effluent to the water reclamation facility owned and operated by Tucson Water. There is ample room for construction access and staging.

Placing the new facility north of the existing Roger Road WRF (Alternative B) reduces the potential with underground utility interferences and could possibly incorporate the existing outfall conduit into a new facility. Construction in this location would require the relocation of the current stormwater basins serving the existing site. Also, there is the potential for inference with the existing disinfection operation during construction. Some fill would be required to raise the existing grades to above flood stage levels. There is ample room for construction access and staging.

The location north of Sweetwater Drive (Alternative C) enables upstream discharge to the Santa Cruz River to increase the riparian habitat along the western perimeter of Pima County's property. More specific from the perspective of PCRWRD, this site presents its challenges with limited construction access and staging area, potential for interferences with existing operations, early demolition of the existing administration building and dealing with the relocation of a network of existing underground piping.

In addition to the site location considerations identified above, there are other stakeholders within or in the near vicinity of the new WRC site with issues to be considered which may influence the final selection of the plant site. These other stakeholders include: Pima County Cultural Resources & Historic Preservation (Cultural Resources); Pima County Natural Resources, Parks and Recreation Department (Parks and Recreation); Pima County Regional Flood Control District (Flood Control) and Tucson Water. PCRWRD arranged a meeting with each of the stakeholders to explore their issues of concern. A summary of the relevant concerns reviewed in the stakeholder meetings on the alternative WRC site locations is provided below.

Cultural Resources

From the perspective of Cultural Resources the three potential sites are adjacent to known archaeological sites and each has the potential to have historic information hidden below the surface that will need to be recovered before construction were to proceed. While the sites are not in zones of known archaeological findings, there will be a need to conduct extensive Phase I Site Investigations on the selected site. If from the Phase I work there is archaeological discoveries, a more costly Phase II Site Investigation will be required to mitigate the site and clear the area for construction activities. Without the Phase I work on a site or sites, Cultural Resources cannot determine if Phase II investigations are necessary or not. Therefore, with the records of previous archaeological surveys in the area, Cultural Resources views each site the same as any of the others. Archaeological investigations will be required on the selected site and the cost of mitigation, if required, is unknown. A summary of the meeting with Cultural Sources is included in the Appendix.

The uncertainty for the need of extensive archaeological investigations on a particular site can be reduced significantly by performing onsite Phase I Site Investigations at a modest cost. The costs of Phase I investigations would range from \$150,000 for one site and upwards to \$250,000 for investigation of all three sites to determine if the cost of Phase II Site Investigations can be avoided.

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Parks and Recreation

Area surrounding the new WRC is viewed by Parks and Recreation as a prime area for a sports complex to serve the community. Access to the sports complex is a primary issue related to successful sports complex operations. Therefore, access to the future park from both El Camino del Cerro on the north and Sweetwater Drive to the south is an important aspect. Other park issues include: space for parking, access to the Santa Cruz River, preservation of the ponds north of Sweetwater Drive, variation in surface terrain features and space for a park facility to house and display archaeological findings.

After a review of the various issues of concern with Parks and Recreation, it was determined that any location would be workable for the future sports complex. However, there is a preference that the new site be located at the Alternative B site (north of the plant) as long as access road can be provided around the WRC to permit park traffic to flow north and south past the plant. The second preference would be the site along Sweetwater Drive (Alternative C). The last preference is Alternative A (northwest site). A summary of the meeting with Parks and Recreation is included in the Appendix.

Flood Control

The 100-year and 500-year flood information was evaluated against the three sites. For the 100-year event, flood water is contained within the river channel. The 500-year flood would extend beyond the existing river banks and would require that the grades at Alternative A and B sites to be build-up to protect the new facilities. Alternative A needs more fill than Alternative B, which is at a higher elevation.

Additional issues that are of concern to Flood Control include the setback from the river of 50 to 100 feet and the disposition of the ponds along Sweetwater Drive. The setback is required to accommodate a future consideration of a linear park along the reach of the Santa Cruz River where the New WRC will be located. With respect to the ponds on the Alternative A site, if the ponds are eliminated due to new construction on the Alternative C site, PCRWRD may be required by Flood Control to construct compensatory ponds elsewhere. A summary of the meeting with Flood Control is included in the Appendix.

Tucson Water

Location of the WRC will have a direct impact on the infrastructure to convey effluent from the new WRC to the existing Sweetwater reclaimed water facilities owned and operated by Tucson Water. In general, the farther the WRC outfall discharges from the existing discharge point the more expensive the infrastructure modifications will be to keep the existing reclaimed water system in operation. Although from the point-of-view of Tucson Water they could accommodate any of the sites, Alternative B would be the best, Alternative C the second best and Alternative A would be the least favorable.

Other issues for Tucson Water include how the WRC will receive flow. The influent pipeline will not be able to pass through the location of new recharge basins which will be located on the City of Tucson property that borders the eastern boundary of the County property. If the plant interconnect pipeline is placed on the east side of the recharge basins, the plant influent pipeline to serve either Alternative A or B will need to be placed north of an existing stormwater ditch which is north of the recharge basins before it can cross over the City of Tucson property to the new WRC. A summary of the meeting with Tucson Water is included in the Appendix.

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4. Alternative Site Discussion

From an evaluation of the stakeholder issues and concerns including those of PCRWRD the goal is to rank the alternative sites for the new WRC from best to least desirable. From the perspective of PCRWRD the least costs to construct new facilities and the least interference to the operations at the existing Roger Road WRD are the two major issues. This would favor Alternative sites A and B. Alternative B has an extra benefit of providing a discharge farther south and could possibly reuse the existing outfall structure, provided the new plant hydraulics permit. Moving Alternative B farther north, but not as far as Alternative A, to avoid interferences with current wastewater systems and operations would be beneficial.

The next stakeholder with the most vested interests in the alternative site selection is Tucson Water, because of the infrastructure investment to connect to the new WRC. Also, Tucson Water reserves the right to restrict placing any pipeline through any recharge basin. With this understanding the first preference of Tucson Water is the Alternative B site location. This is followed by the Alternative A site and lastly the Alternative C site. To support the assumption that the Alternative B site is of lower cost to Tucson Water, the level of infrastructure investment that may be incurred by Tucson Water was developed conceptually for the three alternatives. Costs were based on making pipeline connections from the new WRC facilities to the existing reclaimed water piping system networks. From the conceptual development construction costs for Alternative B were the least, and could range from \$1 million to \$2 million. Construction costs for Alternative A site and Alternative C site were considerable more expensive and each could range up to \$7 million. As with wastewater treatment operations, moving Alternative B farther north, but not as far as Alternative A, would provide better alignment with the incoming sewers and provide less interference with current Tucson Water's reclaimed water operations.

Because of its prime location along Interstate I-10, Parks and Recreation has a large interest in developing the area surrounding the new WRC into a sports complex park. Although the sports complex could be made to work with any of the alternative sites for the new WRC, there is a preference for Alternative B, provided access is provided around the plant site. This would preserve the trees and ponds that exist along Sweetwater Drive for incorporation into the park space. The second and third choices are Alternative C site and Alternative A site, respectively.

Cultural Resources does not have a site preference, but emphasized that the surrounding areas are rich with archaeological artifacts. This translates into a requirement for extensive exploratory excavations to determine if a mitigation and recovery program is necessary at the selected site. The mitigation and recover plan could be expensive, depending on what is discovered. The approach to avoid the expense of mitigation and recovery costs is to proceed with Phase I Site Investigations in the area of the selected site and adjust the location of the new WRC accordingly with any archaeological discoveries.

While Flood Control has plans for a linear park along the Santa Cruz River, an interest in preserving environmental features (ponds on County property along Sweetwater Drive), and the protection flood levels of the new facilities, they do not have a preference for a selected site. The Alternative A site would incur additional costs to relocate the ponds, Alternative B site would require the placement of fill to meet flood protection requirements and Alternative C will require the placement of significant fill to meet flood protection requirements.

Another unknown of the alternative sites are the underlying soil conditions and properties. While the soils in the area are known to support large structures as noted by the existing Roger Road facilities, it is unknown if there are any underlying soil conditions that may add undue costs to construction. There is

New Water Reclamation Campus Location Alternatives

information that significant fill was placed in areas north of the existing Roger Road site in past decades. A preliminary soils investigation program of the selected site would confirm the potential of detrimental subsoil conditions. For the preliminary soils investigation up to 20 borings would be required at a depth of 40 to 60 feet to gather pertinent soil information. With this information new facilities could be placed to avoid costly foundation issues or recommend relocation to an alternative site.

Lastly, PCRWRD plans to construct a new centralized laboratory and general administration facilities adjacent to the New WRC. The final location of these facilities will be coordinated with the final orientation and configuration with the new WRC.

5. Recommended WRC Site

From a review of the site issues and concerns from the stakeholders regarding the location of the new WRC, Alternative B site location with a shift to the north is unanimously the preferred choice of those stakeholders with a vested interest in the WRC location. Other stakeholder's interests can also be satisfied with the selection of this alternative site. The shift north for Alternative B will better accommodate the probable pipe route of the influent flow, because the influent pipeline can not pass through the future Tucson Water recharge basins. Also the shift moves the new WRC construction north of the existing Roger Road fenceline which will further minimize interferences with existing operations. The recommended site is therefore Alternative B¹ as shown on **Figure 5-1**. The location of a new centralized laboratory and general administration facilities are not shown on the plan. These facilities would be located adjacent to the new WRC facilities, either to the north or south.

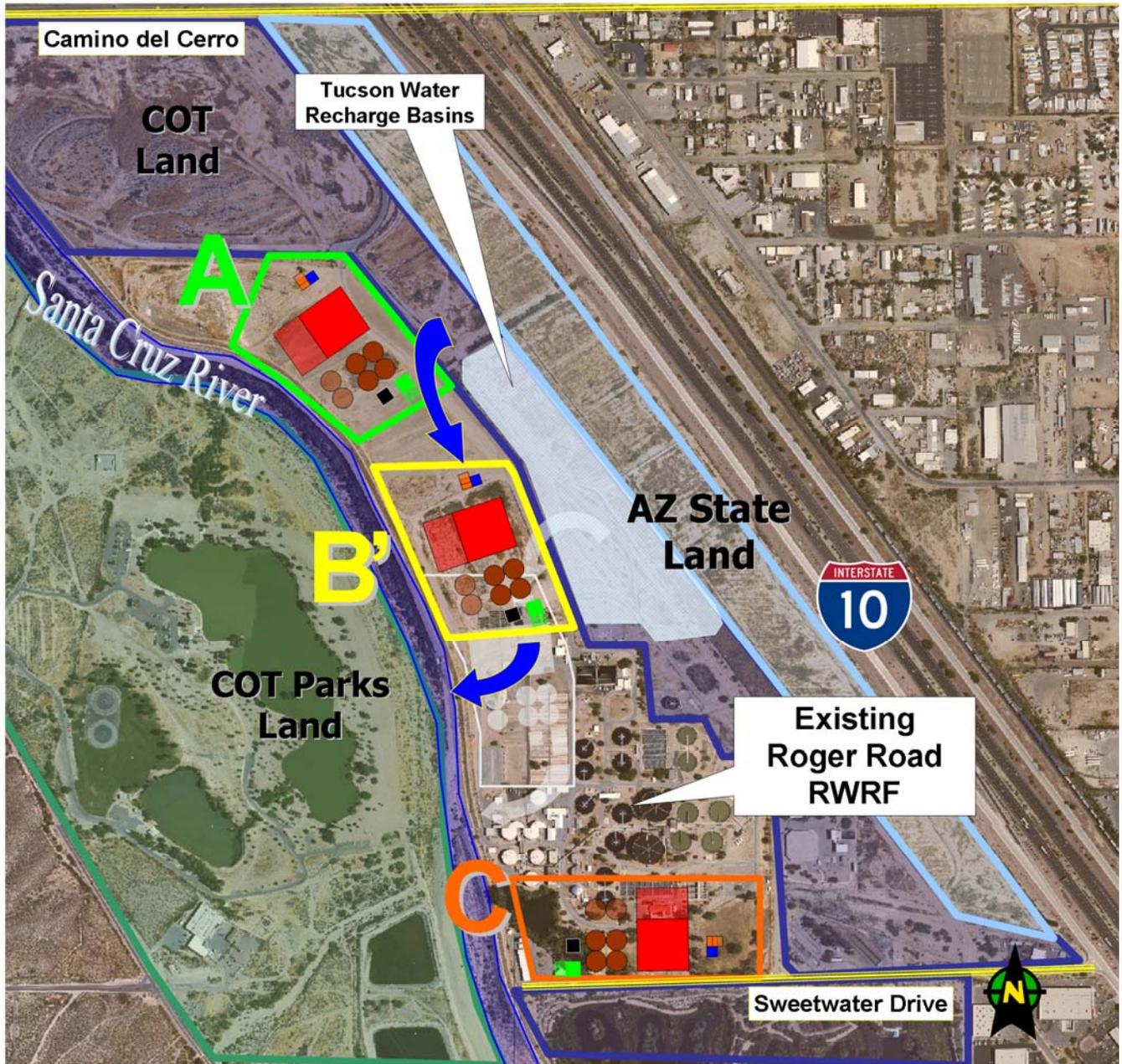
To avoid additional unexpected costs and to confirm the suitability of the recommended site, two actions are recommended in the near future. First, is a preliminary soils investigation program of the site to determine if there are any subsurface issues which may result in costly foundations that could be avoided by moving the recommended plant site further to the north. The preliminary soils investigation would include up to 20 borings, approximately 40 to 60 feet deep, to be taken in the area north of the existing Roger Road WRF.

Secondly, the recommended site will need a Cultural Resources clearance, which requires a Phase I Site Investigations. It is recommended that Phase I Site Investigation be undertaken for approximately 25 acres north of the existing Roger Road WRD fence line. If archaeological features are discovered under the Phase I work, additional site investigations may be recommended to avoid the expense of a Phase II site recovery and mitigation costs.

Upon completion of the soil investigation and cultural resources site investigations, the potential for unexpected costs related to the site selection will be reduced or eliminated.

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Figure 5-1
Recommended WRC Site Location (B¹)



New Water Reclamation Campus Location Alternatives

APPENDIX

Meeting Notes

Pima County Cultural Resources & Historic Preservation
Pima County Natural Resources, Parks and Recreation
Department
Pima County Regional Flood Control District
Tucson Water

Meeting Notes (Final)

Date: January 22, 2008
Location: Roger Road WRF
Subject: Location of New Water Reclamation Campus at Roger Road /
Cultural Resources' Concerns

In attendance were:

Cultural Resources & Historic Preservation

Roger Anyon

Loy Neff

PCRWRD

Ron Riska, Program Manager

Greeley and Hansen

Jerry Bish

Discussion Points

1. General The Pima County Cultural Resources & Historic Preservation Office (Cultural Resources) continually discusses with the Pima County Regional Wastewater Reclamation Department (PCRWRD) the process and requirements for culture resource site investigations related to any new construction along the Santa Cruz River, as well as, elsewhere in the County. It is common knowledge that there are culturally rich areas in the vicinity of the existing Roger Road Wastewater Reclamation Facility (WRF). Since new Water Reclamation Campus (WRC) will be located adjacent the existing the Roger Road WRF, PCRWRD scheduled a meeting to determine issues related to the final site selection of the new WRC as it relates to known culture resource areas. A report on alternative WRC sites entitled "*Water Reclamation Campus Location Alternatives*" report of January 2008 (prepared by Greeley and Hansen) was forwarded to Culture Resources prior to the meeting. Relevant information from the meeting with Culture Resources will be used in the determination of the final site for the WRC.
2. A brief summary of the three alternative site locations was provided to Roger Anyon and Loy Neff. The summary included a short anecdotal land use history of the two northern sites. The northern sites were previously used for agriculture, sludge processing basins, city zoo, disposal site for road construction debris and a burial ground for wastewater treatment plant by-products. Currently, a portion of the area is being used as a desert landscaping operation. A collection of photographs from the



- 1960's were examined at the meeting as an aid to review recent land use history. The land use history indicates that the upper layers of soils on the northern sites were highly disturbed and may include significant volumes of fill materials. Cultural Resources offered that according to the State Antiquities Act that any item over 50 years old could be considered an item of interest.
3. Cultural Resources indicated that all three of the alternative sites are outside of known archaeological site boundaries. This means that the initial site investigations need not be as intensive as if one or more sites were in a known archaeological site boundary. This does not imply that archaeological significant artifacts are not present on one or more of the alternative sites, but that there are no known evidence yet recorded. In fact, since significant archaeological finds have been located in surrounding areas, there is a good probability that one or more sites would have archaeological issues.
 4. Even though the northern sites have evidence of high levels of surface disturbance, a culture resource investigation would be required since there is previous evidence that culturally significant finds were discovered several feet below the existing natural surface.
 5. From the discussion and available information on each of the three alternative sites, the view of Cultural Resources is that no one site would have more or less archaeological issues than any other. Essentially from their point-of-view the sites are the same. They would work with PCRWRD to obtain cultural resource clearance on any one of the sites selected.
 6. There was a discussion on the types of exploratory investigations that Cultural Resources would require for the sites. Phase I Site Investigations include a surface visual inspection and a grid of "slit" trenching the length and breathe of proposed site. Slit trenches would be 20 to 30 meters apart and reach a depth of the proposed foundations. Exploratory soil borings would not be a substitute for slit trenching.
 7. For geotechnical soil boring investigations in any of the sites not previously cleared by Cultural Resources, it is noted that Cultural Resources will need to be notified in advance to allow for monitoring of the subsurface materials. Cultural Resources would like a one month lead time prior to soil boring.
 8. Since it is unknown, what if any, cultural resource mitigation work (and its related costs) is involved with any of the three sites, the possibility of performing a Phase I Site Investigations at one or more site was explored to provide some insight on the effort and resources required to obtain Cultural Resources site clearance. It was suggested that Phase I Site Investigations would not be costly, while Phase II could be very costly depending on what is discovered on the site. Cultural Resources



- indicated that they could estimate the cost of Phase I Site Investigations at each of the three sites and if PCRWRD was interested in more than one site. Cost of two site investigations at the same time is not double the costs of one Phase I Site Investigations. *Cultural Resources will provide estimates for Phase I site investigations within one week.*
9. With regard to scheduling Phase I Investigations, Cultural Resources indicated that if the scope of work is less than \$250,000 they could proceed with QCL contractors to perform the services. This would significantly reduce the amount of time to start the investigations work. From the experience of the Cultural resources representatives, it was believed that the cost of Phase I would be less than the QCL limit. It was further indicated that perhaps more than one site could be investigated for less than \$250,000.
 10. Demolition of the existing Roger Road WRF is an item of concern by Cultural Resources. If in the process of demolition of the existing facilities, soils are excavated below the existing foundations, there will be a need to address the possible discovery of historical artifacts. On the other hand, if existing foundations are left in place while the superstructure and upper part of the substructure is removed, there most likely will not be an issue with Cultural Resources. This will need further discussion with Cultural resources prior to the demolition of the existing facilities.
 11. At the end of the discussions Cultural Resources offered that Pima County Regional Flood Control District could possibly be another stakeholder in the location of new facilities.



Meeting Notes (Final)

Date: January 18, 2008
Location: Roger Road WRF
Subject: Location of new Water Reclamation Campus at Roger Road /
Parks and Receptions' Concerns

In attendance were:

Pima County Natural Resources, Parks
and Recreation Department
Jeff Kramer

PCRWRD
Ron Riska, Program Manager

Greeley and Hansen
Jerry Bish

Discussion Points

1. General The Pima County Natural Resources, Parks and Recreation Department (Parks and Recreation) has been studying the site of the Roger Wastewater Reclamation Facility and the new Water Reclamation Campus (WRC) for the potential to locate a new regional sports complex facility. The sports complex would be located on County owned property adjacent to or surrounding the wastewater facilities and possibly extend onto adjacent land currently owned by the City of Tucson. Therefore, Pima County Regional Wastewater Reclamation Department (PCRWRD) scheduled a meeting to determine the issues of importance with the alternative sites of the new WRC as they relate to the planning of the future sports complex before making the final site selection decision. A report on alternative WRC sites entitled "*Water Reclamation Campus Location Alternatives*" report of January 2008 (prepared by Greeley and Hansen) was forwarded to Parks and Recreation prior to the meeting. Relevant information from the meeting with Parks and Recreation will be used in the determination of the final site for the WRC.
2. Each of the three alternative locations as set forth in the "*Water Reclamation Campus Location Alternatives*" report was discussed with Jeff Kramer. Although the Parks and Recreation indicated they would be able to work with any of the proposed locations, there were some features they would like to have considered in the selection of the final site. Some of these features are more significant than others.



3. Some of the features of concern are described in a report commissioned by Parks and Recreation entitled, “*Roger Road Sports Complex, Best Practices Study*”, January 2008. A copy of the report was provided at the meeting. While this report does not specifically suggest or recommend any specific site at Roger Road for the new WRC, it comments on the features necessary for a well operated sports complex, which Parks and Recreation plan to incorporate into their facilities.
4. The most prominent issue for Parks and Recreation is access by the public. This includes access to the site from Interstate 10 and access through the sports complex site from Camino de Cerro to Sweetwater Drive. Further, there is the possibility of access by bridge to the sites from Columbus Park (City of Tucson) located on the west side of the Santa Cruz River.
5. Other issues of lesser importance than access are:
 - Space for parking vehicles.
 - Maximum access to the Santa Cruz River.
 - Preservation of the duck ponds on County property along Sweetwater Drive. This has become an extension of the Tucson Water Wetlands Facility.
 - Variation in terrain is desirable as opposed to a flat topography.
 - Consideration for the inclusion of a park facility to house and display archaeological findings at or near the site of the sports complex
6. Routing of the plant interconnect along the eastern edge of the County property was addressed. This included a discussion that the surface elevation along the interconnect route may be raised to accommodate the pipeline hydraulics. This was not considered an issue since terrain variation was deemed visually important. Parks and Recreation could work around the pipeline route and surface features related to it.
7. In order of preference, Parks and Recreation prefers the more southerly locations for the new WRC. *Alternative B location (immediately north of the existing wastewater treatment facility) is the preferred site.* Recreational facilities would be placed on both north and south sides of the new WRC. Next would be the Alternative A site location (along Sweetwater Drive). Lastly, Alternative C (northwest corner of the County owned property) would be the third choice.
8. From the perspective of Parks and Recreation none of the alternative sites are “deal breakers.” Parks and Recreation would support the final WRC location at any of the alternative sites.



Meeting Notes (Final)

Date: January 29, 2008
Location: Roger Road WRF
Subject: Location of New Water Reclamation Campus at Roger Road /
Flood Control's Concerns

In attendance were:

Regional Flood Control District

Bill Zimmerman

PCRWRD

Ron Riska, Program Manager

Greeley and Hansen

Jerry Bish

Discussion Points

1. General. Each of the alternative site locations for the new Water Reclamation Campus (WRC) is located adjacent to the existing Roger Road Wastewater Reclamation facility and along the Santa Cruz River. From the discussions with other stakeholders regarding the final site selection location it was determined that the Pima County Regional Flood Control District (Flood Control) has some requirements and issues that will need to be considered in the final selection of a site. Therefore, the Pima County Regional Wastewater Reclamation Department (PCRWRD) scheduled a meeting to identify specific impacts of each alternative site with regard to Flood Controls issues. Relevant information from the meeting with Flood Control will be used in the determination of the final site for the WRC.
2. A brief summary of the three alternative site locations was provided to Flood Control. During the summary, Flood Control indicated that flood elevations, setback requirements along the Santa Cruz River and the existing onsite ponds would be of concern.
3. The Santa Cruz River banks in the areas of the three alternative site locations are raised and reinforced with soil cement to accommodate 100-year flood levels. The flood maps in the area indicate that a 500-year flood would extend beyond the banks of the river, which may indicate overtopping of the bank or that flood waters may enter the low areas behind the river bank from a low bank elevation somewhere along the river. The new facilities in any of the alternative sites would be protected up to



- the 100-year flood, but may need to be protected up to the 500-year flood level (Flood Control will check on this requirement). Flood Control indicated that specific information of the river bank elevations and the 500-year flood elevation was available and will provide this information to PCRWRD within the next week.
4. A specific question was asked if constructing facilities at the Alternative A location (on the bend of the river) was more vulnerable to flooding than the other two alternatives. Flood Control indicated that there was no more vulnerability related to Alternative A than the others. For example, no additional costs would be needed for bank reinforcement if the final site were at Alternative A, B or C locations.
 5. Flood control has a requirement that all facilities constructed along the Santa Cruz River have a setback of 50 to 100 feet. The setback is from the top bank edge next to the river. The setback requirements are for a linear park.
 6. Flood Control indicated that the onsite ponds associated with Alternative C (site along Sweetwater Drive) would be of concern with the environmental division within their operations. If Alternative C is selected, it is most likely that some compensatory mitigation measure would be required, i.e., ponds constructed elsewhere to replace the loss of the onsite ponds.
 7. From the perspective of Flood Control there is no preference of one site over any other. Further, there are no "deal breakers" with the selection of any of the sites. As a caution from the perspective of Flood Control, there may be more costs involved with the selection of the site along Sweetwater Drive, Alternative C, (pond relocation) than either of the others.



Meeting Notes (Final)

Date: January 25, 2008
Location: Tucson Water Conference Room
Subject: Location of New Water Reclamation Campus at Roger Road /
Tucson Water's Concerns

In attendance were:

Tucson Water

Pat Eisenberg

Melodee Loyer

Dennis Rule

Wally Wilson

PCRWRD

Ron Riska, Program Manager

Greeley and Hansen

Jerry Bish

Discussion Points

1. General Tucson Water has a vested interest in the final site location of the New Water Reclamation Campus (WRC) at Roger Road. Tucson Water will need to capture the effluent from the new facility and convey it to the Sweetwater operations adjacent to the existing Roger Road Wastewater Reclamation facility. The Sweetwater operation processes the effluent and transfers the water into its reclaimed water system. In addition, Tucson Water is working with the Pima County Regional Wastewater Reclamation Department (PCRWRD) in locating the plant interconnect pipeline between Roger Road and Ina Road around new recharge basins to be constructed by Tucson Water on City owned property. The alternative locations for the new water campus may have an impact the planned interconnect route and on new recharge basins (identified as 9,10 and 11 by TW).

Since the source of the reclaimed water will change with the construction of the new WRC, additional conveyance infrastructure will be required to serve Tucson Water's Sweetwater operation. Therefore, PCRWRD scheduled a meeting to identify specific impacts on each of the alternative sites for the new WRC. A report on alternative WRC sites entitled "*Water Reclamation Campus Location Alternatives*" report of January 2008 (prepared by Greeley and Hansen) was forwarded to Tucson Water



prior to the meeting. Relevant information from the meeting with Tucson Water will be used to help the determination of the final site for the WRC.

2. A brief summary of the three alternative site locations was provided to Tucson Water. During the summary, Tucson Water indicated that Pima County Regional Flood Control District (Flood Control) will have setback requirements along the Santa Cruz River. The setback is for a future linear park. Also, there was expressed a concern that locating a facility close to the bend in the river (Alternative A) may create a need for reinforced bank protection. This would be something to discuss with the County Flood Control.
3. In general, there are three concerns that Tucson Water expressed concerning the final site selection. These are: 1) infrastructure costs related to relocation of effluent source, 2) accessibility to their systems, pipelines and equipment and 3) location of the plant interconnect pipeline.
4. Currently, Tucson Water receives plant effluent from the County owned and operated chlorine contact basin through a 66-inch gravity flow pipeline. The transfer pipeline discharges into a wet well on City of Tucson property a short distance from the chlorine contact basin. The wet well is outfitted with several pumps to serve the Sweetwater recharge basins, filter operations and Silverbell Golf Course. In the near future additional pumps will serve the new recharge basins.
5. The location of the existing wet well and associated pipelines is the central feature related to the additional infrastructure cost to be incurred with each alternative. Each alternative site for the new WRC will have a different cost associated with the relocation effluent source.

For Alternative A, the existing wet well cannot be reused unless an equalization basin is provided. From an engineering perspective moving the wet well to the source also provides for better operational control and flexibility. To accomplish this, a new wet well will need to be constructed near the WRC chlorine contact basin, pumps installed and new pipelines run to connect to the existing piping systems near the existing wet well.

For Alternative B, it may be possible to convey effluent by gravity to the existing wetwell, dependent on the final facility hydraulic profile. A new gravity pipeline from the new WRC chlorine contact basin to the wet well would need to be constructed. It is possible that a new wet well would need to be constructed to handle changes in the hydraulic head of the new wastewater treatment works. In either case, the existing pipeline network in Tucson Water's system could be used with minimal modifications.



- For Alternative C, a new wet well would be constructed adjacent to the new WRC chlorine contact basin, and new pipelines would be constructed in Sweetwater Drive to connect to the piping systems that serve the various areas of the Tucson Water's Operations.
6. From the perspective of Tucson Water, they can work with any of the three alternative sites. There is no "deal breaker" if one site is selected over another, unless an alternative would need to route a pipeline through the area of the new recharge basins. Tucson would be opposed to any alternative that had a pipeline pass through the area of the new recharge basins. Although from a cursory review of the alternatives at the meeting, it appears that some alternatives will have a greater cost impact to Tucson Water than others. In the final site selection report, conceptual costs related to Tucson Water infrastructure modifications will be developed and assigned to each alternative.
 7. Accessibility to all of Tucson Water's assets is a concern. For example, the new recharge basins will occupy a large parcel of land on the eastern boundary of the County property. Tucson Water wants to maintain access to these basins and associated pipelines. And, if Alternative A is selected an easement for new pipelines to connect to existing systems may be necessary along the eastern County property line.
 8. Location of the plant interconnect pipeline issue relates to its relationship to the new recharge basins. Tucson Water does not want the new pipeline to cross through the recharge basins. The plant interconnect pipeline can be placed around the basins to the north or on County owned property to the west. If the plant interconnect pipeline goes around the recharge basin to the north, the pipeline would need to cross the City of Tucson property north of a stormwater ditch that bisects the property.
 9. The current PCRWRD plan is to place the plant interconnect pipeline on State of Arizona property that lies immediately east of the location of the new Tucson Water recharge basins. This would require for Alternative A and B locations for the new WRC that the connection between the plant interconnect pipeline and the new WRC would need to cross the City of Tucson property north of the new recharge basins. Based on the location of the pipeline crossing of the WRC connection pipeline, the Alternative B location may want to move northward by several hundred feet to better align with the proposed pipeline crossing.
 10. If the interconnect pipeline is placed on State of Arizona land east of the new recharge basins, PCRWRD will need to obtain an easement. That easement may be 100 feet wide and run along the western property line of the State owned land from Sweetwater Drive to Camino de Cerro. If this occurs, Tucson Water requested consideration in the routing and easement acquisition. This would require more



- discussion and an agreement between parties. (Note: TW also identified a future need for an easement between Ina and Roger Road Facilities for a future reclaimed water transmission line.)
11. A fourth possible site was discussed briefly. This site is on City of Tucson property along the Santa Cruz River, north of the County owned property and south of Camino de Cerro. This was the location of wastewater lagoons operated by the City of Tucson decades ago. Tucson Water expressed that they would have none or few issues with that site, although the cost of connecting the reclaimed water infrastructure would be greater than that of the Alternative A site. One possible advantage of this site may be less archeological concerns, although a Phase I Site Investigation would most likely be required.
 12. After discussion of the three alternative sites, Tucson Water was able to rank the alternatives from their perspective. The ranking essentially follows the cost of infrastructure investment that Tucson Water would incur with selection of the alternative. The order of *preference is Alternative B (immediately north of the existing wastewater treatment facility)*, and then alternative C followed by Alternative A. From a cost perspective Alternative B would appear to be very strongly preferred over either Alternatives A or C. The one caveat for all alternatives is that no pipelines can pass through the area of the new recharge basins.

