



South Mountain Transportation Corridor Study

Citizens Advisory Team
Technical Report Summary

Draft Water Resources

Why study water resources in the Environmental Impact Statement (EIS)?

It is clear that as our population grows in the West, water has become and will continue to be a very important commodity. Water will be even more important to residents in the arid southwestern portion of the United States. As such, how we use, conserve, and treat our water will continue to be of utmost importance in the years ahead. In the southwest, we depend on both surface water and groundwater supplies for our every day uses (i.e., drinking, irrigation, flood control, and recreation).

A project like the proposed South Mountain Freeway could have effects on water resources in the Study Area. If not planned for and constructed properly, the project could alter surface and ground water conditions. Some examples are:

- Surface water flows into neighboring washes and rivers like the Salt River could be altered. This could have effects on neighboring vegetation, habitat, and water flow volumes. A project like the South Mountain Freeway could also alter the direction in which water flows in the Study Area.
- Quality of the water entering drainages as well as in the ground water could be altered.
- Existing wells in the path of the South Mountain Freeway could be closed and in turn, new wells would have to be located.

For the purposes of the EIS, the study team analyzes the potential impacts on water resources in the Study Area. Depending on the types of impacts identified, the study team would propose measures to avoid, reduce or otherwise mitigate the impacts when appropriate.

Conversely, surface water flows, if left uncontrolled can cause substantial damage to a project like the proposed South Mountain Freeway once constructed. Consequently, the study team looks at drainage features that would need to be incorporated into the project design to ensure surface water flows do not cause damage to the freeway.

What kind of impacts would occur from construction?

There are several ways the construction of a project like South Mountain Freeway could alter water resources in the Study Area. Some examples are listed below:

- Surface water quality could be altered from runoff drainage and equipment operations. If not properly planned for, silt, sediment, and equipment-related materials could enter into neighboring drainages altering the quality of the surface water.
- For a project of the magnitude of the proposed South Mountain Freeway, it would not be unusual for construction to occur in close proximity to both active and closed wells. These wells tap into the Study Area's groundwater supplies. Unforeseen construction accidents such as equipment spills could result in undesirable runoff into these wells and in turn, possibly be detrimental to the quality of groundwater supplies.
- There likely would be numerous types of wells in the Study Area. State government typically keeps very close track of the wells' locations and purposes (in the case of Arizona, the Arizona Department of Water Resources (ADWR) monitors the wells).



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Wells within the possible path of a project like the South Mountain Freeway are often used for monitoring, production, geotechnical observation, domestic uses, testing purposes and irrigation. If such a well(s) is within the proposed right-of-way, ADOT would need to look at ways to relocate the well to a new location. If the well is inoperable, ADOT would look at what would need to be done to cap the well to ensure no degradation to ground water supplies would occur. See Figure 1 for wells located in the Study Area.

For the South Mountain Freeway project, do the alternatives differ in construction-related impacts?

There would be no substantial differences in the types or magnitude of potential impacts on water resources as a result of project construction. There is a possibility that construction activities could alter surface water flows and the quality of the flows into neighboring washes and rivers like the Salt and Gila rivers, and in turn, have effects on neighboring vegetation, habitat, as well as flow volumes and the direction of the flows. However, there are many required and standard construction practices that would be implemented to reduce the potential for these kinds of incidents from occurring. They are summarized later in this document

There are a number of wells potentially affected by relocation as shown in the table below. For a project like the South Mountain Freeway, the number of wells within the proposed alignments is not considered unusual. As mentioned, many of these wells tap into the Study Area's groundwater supplies. Unforeseen construction accidents such as equipment spills could result in undesirable runoff into these wells and in turn, possibly be detrimental to the quality of groundwater supplies. Again however, there are many required and standard construction practices that would be implemented to minimize these kinds of incidents from occurring. They too are summarized later in this document.

Alternative/Options	# of Wells
Western Section	
W55	32
W71	33
W101WPR	54
W101WFR	52
W101W99	45
W101CPR	58
W101CFR	56
W101EPR	55
W101EFR	53
Eastern Section	
E1	29



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What kinds of freeway operational impacts (post-construction) would occur?

Surface water quality could be altered from runoff drainage (until seeded vegetation is established) and by increased pollutants from vehicles using the impervious surface of the freeway.

Do the alternatives differ in operational-related impacts?

When operating, any of the alternatives or options would have similar kinds and levels of impacts on surface water quality. There are no distinct differences in operational-related impacts among the action alternatives.

What if the project was not constructed?

No project specific impacts would be experienced. However, urban growth is projected to continue in the Western Section and traffic volumes would increase on surface streets as a result. Pollutants would continue to increase on surface streets and drainage runoff from construction areas would increase.

Are there any specific and/or unique impacts from the action alternatives?

There appear to be two unique potential impacts specific to the proposed South Mountain Freeway project. The first is common to all action alternatives in the Western Section of the Study Area. These alternatives would likely cross several irrigation canals within the Study Area. However, the impact on these canals can be mitigated by pipe conveyance under the freeway, which is a standard practice.

The second 'unique' potential impact relates to the 'cuts' that are anticipated thru three ridgelines along the northern border of the Gila River Indian Community. It is expected that the cuts may be substantial in size and could pose challenges in controlling unwanted runoff during construction and once in operation.

Are there things that could be done to reduce or avoid impacts?

ADOT will look at a number of ways to avoid, reduce, or otherwise mitigate construction-related impacts. Examples of some of the measures ADOT could undertake are listed below.

The actions that would be taken to reduce construction impacts are governed by Section 402 (NPDES) of the CWA. A permit would be required when ground disturbing activities exceed one acre. This project would disturb more than five acres and as such is considered a large construction project and a permit will be required.

The permit would include the development of a Stormwater Pollution Prevention Plan (SWPPP) which includes what are known as Best Management Practices for controlling construction



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related pollution discharge. The types of practices ADOT could employ to reduce impacts include:

- Construction of silt barriers
- Inspect construction equipment
- Establish sediment basins
- Identify and use controlled equipment fueling and maintenance areas
- Proper disposal of potentially contaminated materials
- Limit vegetation removal and soil disturbance
- Maintain flatter slopes
- Clean freeway at construction completion
- Seed and mulch exposed slopes immediately after construction
- Abandon/replace existing groundwater wells as necessary. New wells installed in accordance with Arizona Department of Water Resources (ADWR) requirements.
- Allow flow of existing canals, irrigation water, etc.

ADOT will develop a specific SWPPP during the final design efforts for the project.

If a well is affected due to roadway construction, well abandonment and compensation (drilling a new well) may be required. Impacted wells that require full replacement via drilling a new well will be required to comply with the 1983 ADWR well impact rules.

Other measures that ADOT can consider are:

- Surface water quality could be improved when the freeway is open to operation by proper maintenance of the retention, detention, and stormwater runoff facilities.
- For wells that are affected during construction, the well would be abandoned and the owner would be compensated by drilling a new well.
- Affected irrigation ditches could be conveyed via pipe under the freeway.
- Clean Water Act (CWA) section 401 certification by the ADEQ will be conducted.

What can be done to reduce water resource impacts once the freeway is operating?

There are a range of activities ADOT could undertake during construction to reduce operational impacts when the freeway is open to the public. These measures could include:

- Properly designed roadway channels resistant to erosion.
- Maintain appropriate slope vegetation.
- Rock slope protection where necessary.
- Settling basins for containment of initial flow of pollutants during precipitation.

Measures will be presented in the Draft EIS and finalized during the final design process after the EIS is completed.



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Are the conclusions presented in this summary final?

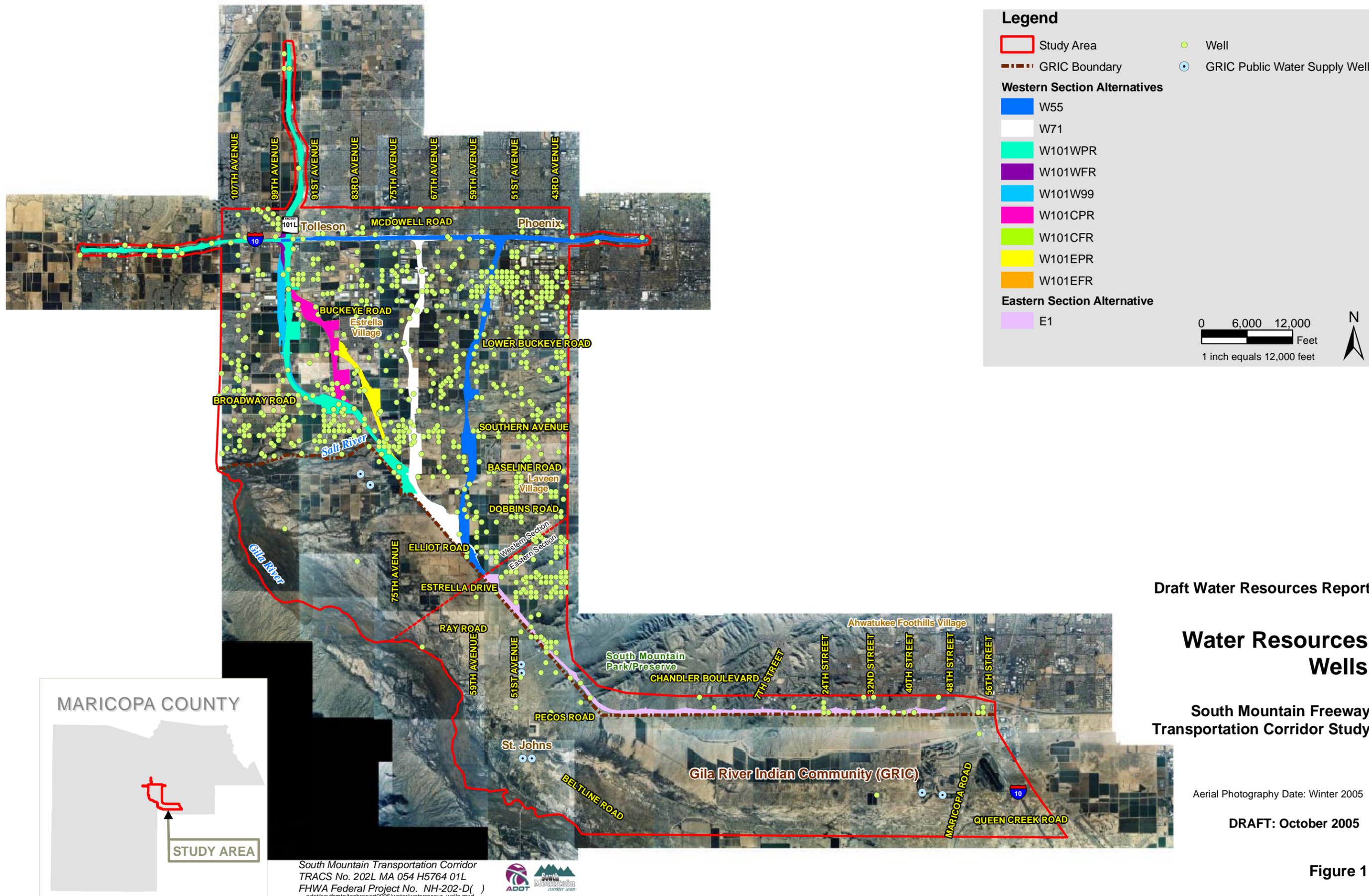
It is quite likely that quantitative findings relative to impacts are subject to change. The reasons for future changes which will be presented to the public during the Draft EIS, Final EIS and Final Design stages are based on the following:

- Refinement in design features through the design process.
- Updated aerial photography as it relates to rapid growth in the Western Section of the Study Area.
- On-going communications with the City of Phoenix regarding measures to minimize harm to South Mountain Park/Preserve.
- On-going communications with GRIC in regards to granting permission to study action alternatives on GRIC lands.
- Potential updates to traffic forecasts as updated regularly by MAG.
- Potential updates with regards to the special 2005 survey to augment the 2000 Census.
- As design progresses, cost estimates for construction, right-of-way acquisition, relocation and mitigation will be updated on a regular basis.

However, even with these factors affecting findings, it is anticipated the affects would be equal among the alternatives and consequently impacts would be comparatively the same. This assumption would be confirmed if and when such changes were to occur.

As a member of the Citizens Advisory Team, how can you review the entire technical report?

The complete technical report is available for review by making an appointment with Mike Bruder or Ralph Ellis at 602-712-7545.



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Water Resources Wells

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Aerial Photography Date: Winter 2005

DRAFT: October 2005

Figure 1

October 2005