APPENDIX C: WATER QUALITY

APPENDIX C-1: 404(b)(1) EVALUATION

Introduction. The following evaluation is provided in accordance with Section 404(b)(1) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500), as amended by the Clean Water Act of 1977 (Public Law 95-217). Its intent is to succinctly state and evaluate information regarding the effects of discharge of dredged or fill material into the waters of the United States. As such, it is not meant to stand alone and relies heavily upon information provided in the Environmental Assessment (EA) to which it is attached. Citations in brackets [] refer to expanded discussion found in the EA, to which the reader should refer for details.

1. PROJECT DESCRIPTION

a. Location. Tanque Verde Creek is a tributary to the Rillito River, and is located along the northern border of the greater Tucson area in eastern Pima County, Arizona [1.1].

b. General Description. The proposed action will include stabilization of approximately 1.4 linear miles (discontinuous) of unprotected banks of Tanque Verde Creek with soil cement between Craycroft Road and Sabino Canyon Road. Approximately 5,900 linear feet of protection will be placed on the south bank, and approximately 1,600-linear feet will be placed on the North Bank. The project also includes acquisition of a 45-acre desert riparian mesquite bosque as a preserve on the north bank [3.3; 3.3.2].

c. Authority and Purpose. Tanque Verde Creek, as part of the currently authorized Rillito River and Associated Streams Study (RRAS) was authorized in Public Law 761, Seventy-fifth Congress, known as Section 6 of the Flood Control Act of 1938 [1.3].

d. General Description of Dredged or Fill Material.

(1) General Characteristics of Material. Fill material consists primarily of clean gravels and sands with occasional silts excavated from the toe and slopes of the existing banks and mixed with cement to provide bank stability [3.3.2].

(2) Source of Material. It is anticipated that all borrow material needed would be obtained from the stream channel adjacent to each area being filled. This borrow material would consist of excess material excavated for the toe-down of the bank protection and material excavated from the banks to provide a uniform slope on which to place the soil cement. Material will not be excavated from the wash for the sole purpose of being used as borrow material. Cement will be obtained from nearby commercial sources [3.3.2]. Outside commercial sources of fill material are not considered practical due to cost considerations for obtaining the material and for disposal of the excavated material.

(3) Quantity of Material. Approximately 40,500 cubic yards (cy) of soil cement and 29,000 cy of compacted fill material would be required for bank stabilization. Approximately 7,900-8,400 tons of cement (stabilizer) would be required to prepare the soil cement [3.3.2].

e. Description of the Proposed Discharge Sites. - the proposed project does not involve the disposal of dredged material, but does involve the placement of fill material. The discharge sites (for placement of fill material) are along both banks of Tanque Verde Creek between Craycroft Road and Sabino Canyon Road. Portions of these areas have been eroded by

past flood events, particularly the October 1983, January 1993, and possibly January 1995 floods. The banks are mostly unvegetated or sparsely vegetated except on the south bank at the confluence with Pantano Wash and the Rillito River where a dense stand of mesquite, with some cottonwoods, is present. A larger stand of desert riparian vegetation (mesquite bosque) occurs on the north bank; however, no soil cement will be placed in that reach [3.3.2].

f. Description of the Disposal Method. - Since construction would be accomplished primarily during the dry season, conventional construction methods would be used. After completion of the excavation and backfill, the stream banks would be protected by the use of soil cement. The soil cement plant would be located within the channel, and all materials, except for the cement, would be obtained from the channel. The cement would be obtained from a commercial source [3.3.2].

2. FACTUAL DETERMINATIONS

a. Physical Substrate Determinations. Construction of the project would result in the replacement of the existing substrate with fill material obtained from the stream channel and with soil cement for bank protection. Soil cement bank protection would prevent erosion of the bank. Since Tanque Verde Creek is an ephemeral watercourse, there is no significant benthic community in the stream [3.3.2; 5.2].

b. Water Circulation, Fluctuation, and Salinity Determinations. The proposed action is expected to have a minor effect on velocities and water surface elevations. Especially in the

vicinity of the Tucson Country Club, flood flows will be more confined between the channelized banks than under existing conditions, resulting in a temporary increase in water surface elevation and increased velocities. No significant effect on circulation is expected. The proposed action will not significantly affect salinity, water chemistry, clarity, color, odor, taste, dissolved gas levels, nutrients, or eutrophication of water in Tanque Verde Creek [5.3].

c. Suspended Particulate/Turbidity Determinations. The project would have a long-term beneficial effect on turbidity. Since construction is to take place primarily during the dry season, there would be no significant construction impacts. Since the creek bank would be protected by soil cement, turbidity over the long term should be decreased [5.3].

d. Contaminant Determinations. No contaminants would be introduced into Tanque Verde Creek as a result of the project. Since the fill material is uncontaminated and from the same area as the disposal site, it is exempt from further chemical or biological testing (40 CFR 230) [5.3].

e. Aquatic Ecosystem and Organism Determinations. Since Tanque Verde Creek is ephemeral and carries water only during and after rainstorms, there is no permanent aquatic community; therefore, the project will not affect any aquatic organisms or aquatic ecosystem [5.3; 5.5].

f. Proposed Disposal Site Determinations. The project would not violate any applicable water quality standard and would not affect human use of the river. The water of Tanque Verde Creek is not used for any municipal or private water supply. Tanque Verde Creek is not suitable for either fishing or other water-oriented recreation. Esthetic impacts of the project could be adverse along portions of Tanque Verde Creek where the soil cement may look unnatural. No National or Historic Monuments, National Seashores, Wilderness Areas, Research Sites, or similar areas are located in the project area.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. The extent of proposed bank protection is relatively minor, as compared with existing bank protection. No additional bank protection on Tanque Verde Creek, the Rillito River or other tributaries is anticipated in the near future. Although there have been cumulative impacts, due to several federal and non-federal projects on the Rillito River and Tanque Verde Creek, additional projects of this type are not foreseen in the immediate future. The Rillito River Bank Protection Project did not involve formal mitigation for loss of habitat, but that project included extensive plantings of native vegetation for aesthetic treatment associated with recreational features [5.13].

h. Determination of Secondary Effects on the Aquatic Ecosystem. - The proposed project will have some effect on the hydraulics of the wash as it confines the flows which were previously unconfined; however, since the Rillito River, downstream of the confluence of Tanque Verde and Pantano Wash, is almost entirely channelized, downstream effects would be minor. The Lateral Migration Study (Appendix A of the EA) indicates that erosion of the proposed preserve area would not increase substantially with the hardening of the opposite bank.

3. FINDING OF COMPLIANCE FOR THE TANQUE VERDE CREEK PROJECT

a. No significant adaptations of the guidelines were made relative to this evaluation.

b. No feasible alternative was available that would have had a lesser impact on the project area. Web cellular confinement systems were investigated as potential alternatives. These systems would require the addition of concrete into the cells, as flow velocities would exceed 15 feet per second, thus defeating their intended environmental functions. The Corps determined that gabions and stone revetment (rip rap) were cost inefficient and would not provide an adequate level of protection against anticipated velocities of major storms. Grouted stone was determined to be cost-effective, but would not have less impact on the environment than soil cement [3.0; 3.3; 3.4].

c. The proposed project would not violate any applicable state water quality standards or the Toxic Effluent Standards of Section 307 of the Clean Water Act.

d. The proposed project would not harm any endangered species or their critical habitat [4.5].

e. The proposed placement of fill material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life

stages of aquatic life and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, esthetic, and economic values will not occur.

f. On the Basis of the Guidelines, the Proposed Disposal Site(s) for the Discharge of Dredged or Fill Material is specified as complying with the requirements of Section 404(b)(1) of the Clean Water Act with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic and riparian ecosystems [5.14].

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Date: June 20 **APPENDIX - C**, 2000

APPENDIX C-2: ADEQ FORM 404-003

ADEQ/WQD FORM 404-003 Rev 12/29/94

THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY POLICY FOR PROTECTING WATER QUALITY DURING FACILITY CONSTRUCTION

Prepared by: Lois Goodman Date: May 2002

For each policy, please describe the procedures, practices and/or facilities that will (a) minimize potential pollution of surface waters and (b) demonstrate compliance with State water quality standards (A.A.C. Title 18, Chapter 11, Articles 1, 2 and 3). Please note that the waters of the State include all watercourses, and perennial or intermittent streams (A.R.S. §49-201.31).

POLICY (1) Provision for temporary pollution control measures such as dikes, basins, ditches, diversions, silt fences and the application of straw and seed, to be functional prior to land disturbing activities.

Clean material will be used to construct the levee, and no construction will occur during heavy storm events. Extensive measures to control water pollution are not anticipated because the stream flows only intermittently. Procedures to minimize erosion during construction would be followed, including: checking weather conditions daily; using clean water and material to stabilize creek banks; ensuring that no polluted silt or other material is placed in the creek or wash; removing debris from the washes; and postponing construction during rainstorms or flood events.

POLICY (2) Erosion control measures including minimizing clearing and grubbing and limiting exposure of erodible surface to 750,000 square feet for each construction phase or location.

The entire area to be disturbed will be considerably under 750,000 square feet.

POLICY (3) Construction of footings in water by sheet pile cofferdam method and pumping water from within the dam to settling ponds before returning it to the watercourse.

Not applicable.

POLICY (4) Isolation of the construction area by dikes and/or berms.

Construction would not occur within the flowing stream; therefore, sand dikes or berms would not be necessary.

POLICY (5) Erection of barriers, covers, shields and other protective devices as necessary to prevent any construction materials, equipment or contaminants/ pollutants from falling or being thrown into a watercourse.

Not applicable.

POLICY (6) Construction of drainage facilities with armoring when necessary to control erosion and sedimentation.

Not applicable

POLICY (7) Provision of an adequate means, such as a bypass channel, to carry a stream free from mud and silt around operations which remove material from beneath a flowing stream.

Diversion dikes or a bypass channel will be constructed, as necessary, to convey flows free from silt and mud around the excavation area.

POLICY (8) A requirement for transportation of materials across live streams to be conducted without muddying the stream. Mechanized equipment should not be operated in stream channels of live streams except as may be necessary to construct crossings or barriers and fill for channel modifications.

A requirement for transportation of materials across a live (flowing) stream is not anticipated.

POLICY (9) A requirement for wash water from aggregate washing or other operations containing mud or silt to be treated by filtration or retention in a settling pond, or ponds, adequate to prevent water from transporting sediment into streams or watercourses.

Environmental protection specifications for the project will include provisions requiring the contractor to prevent sediment-laden wash water from entering the f lowing stream.

POLICY (10) A requirement for oily or greasy substances originating from the contractor's operations not be placed where they will later enter a stream or watercourse.

Environmental protection specifications will stipulate that chemical waste, including oily and greasy substances, will be stored in corrosion-resistant containers, removed from the work area, and disposed in accordance with federal, state, and local regulations. The specifications will also prohibit the contractor from allowing oil or grease to drain onto the ground where they could later be washed into the watercourse.

POLICY (11) Provisions for Portland cement or fresh Portland cement concrete not be allowed to enter flowing water of streams.

Construction would not occur during major storms or periods of high water, thus, there would be little risk of Portland cement (a component of soil cement). Additional precautions will be taken when mixing the soil cement

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POLICY (12) A requirement to return the flow of streams as nearly as possible to a meandering thread without creating a possible future bank erosion problem when operations are completed.

Construction and excavation will occur along and adjacent to the banks. Little or no effect to the low-flow channel is anticipated.

POLICY (13) A requirement that material derived from roadway work should not be deposited in a live stream channel where it could be washed away by stream flows.

Not applicable. The project will not involve roadway work.

POLICY (OTHER POLLUTANTS) A requirement that plans and procedures be prepared for facilities and activities within a watercourse to protect water from pollution with fuels, oil, bitumens, calcium chloride and other harmful materials.

The contractor will be required to prepare an Environmental Protection Plan, subject to Corps approval, prior to commencing work. The plan will include measures to protect water from pollution with fuels, oil, bitumens, calcium chloride and other harmful materials.

POLICY (MONITORING) The person responsible for the activity should monitor for turbidity every day in which there is a disturbance of the bed of the waterway. Monitoring should be performed not greater than 300 feet downstream from the construction or related operations and 100 feet upstream, and may be required at different frequencies and for other parameters to demonstrate compliance with water quality standards. Reports of turbidity levels should be reported to the Arizona Department of Environmental Quality, Surface Water Quality Section.

The majority of construction will occur "in the dry." In the event that some construction will occur during periods of stream flow, monitoring of water areas affected by construction activities will be included in the construction specifications as follows: The contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. Monitoring of water areas affected by construction activities shall be the responsibility of the contractor. Water shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.

ADDITIONAL INFORMATION

Not applicable.