SAN ANTONIO RIVER
EL CODO DITCH DIVERSION
REHABILITATION

RIO GRANDE INTERBASIN ROUNDTABLE

Water Supply Reserve Account

Grant Application

February, 2009

COLORADO WATER CONSERVATION BOARD

WATER SUPPLY RESERVE ACCOUNT
2007-2008 GRANT APPLICATION FORM

SAN ANTONIO RIVER -- EL CODO DITCH DIVERSION REHABILITATION
Rio Grande Basin

Name of Water Activity/Project **River Basin Location**

$65,000.00	[X] Basin Account	[X] Yes
	[ ] Statewide Account	[ ] No
Amount of Funds Requested	Please Check Applicable Box	Approval Letter Signed By Roundtable Chair and Description of Results of Evaluation and Approval Process

*** For the Basin Account, the Application Deadline is 60 Days Prior to the Bimonthly CWCB meeting. The CWCB meetings are posted at www.cwcb.state.co.us and are generally the third week of the month.**

*** For the Statewide Account, the Application Deadline is 60 Days Prior to the March and September CWCB Board Meetings.**

* In completing the application you may attach additional sheets if the form does not provide adequate space. If additional sheets are attached please be sure to reference the section number of the application that you are addressing (i.e., A.1. etc.).

Instructions: This application form must be submitted in electronic format (Microsoft Word or Original PDF are preferred). The application can be emailed or a disc can be mailed to the address at the end of the application form. The Water Supply Reserve Account Criteria and Guidelines can be found at http://cwcb.state.co.us/IWMD/. **The criteria and guidelines should be reviewed and followed when completing this application**. You may attach additional sheets as necessary to fully answer any question, or to provide additional information that you feel would be helpful in evaluating this application. Include with your application a cover letter summarizing your request for a grant. If you have difficulty with any part of the application, contact Todd Doherty of the Intrastate Water Management and Development (Colorado Water Conservation Board) for assistance, at (303) 866-3441 ext.3210 or email Todd at todd.doherty@state.co.us.

Generally, the applicant is also the prospective owner and sponsor of the proposed water activity. If this is not the case, contact the Todd Doherty before completing this application.

Water Supply Reserve Account – Grant Application Form
Form Revised May 2007

Part A. - Description of the Applicant (Project Sponsor or Owner);

1. Applicant Name(s): El Codo Ditch Company

Mailing address:
El Codo Ditch Company
3292 Road 12.5
P.O. Box 34
Antonito, CO 81120

Taxpayer ID#: 30-0164283 Email address:

Phone Numbers: Business: 376-480-0657
Home: 719-580-5568
Fax:

2. Person to contact regarding this application if different from above:

Name: Lawrence Gallegos

Position/Title President

3. Provide a brief description of your organization below: see "Description of Applicant" in Part 2 of Criteria and Guidance for required information.

El Codo Ditch Company, (ECDC) with priority #3, is the highest priority ditch that is still intact from its creation more than 150 years ago. Tracing its ancestry to the *acequia* irrigation system of the Spanish land grant era, El Codo Ditch (the Ditch) is one of Colorado's oldest man-made open channels. It runs south to north just west of State Highway 285, providing water for the flood irrigation of more than 1,500 acres in Conejos County. El Codo Ditch originates on the San Antonio River less than a mile north of the New Mexico border (Attachment A). As its Spanish name implies, the main section of the Ditch diverts from the San Antonio and then rejoins it after about 7 miles, forming "the elbow" of surface water which irrigates staple crops of hay and alfalfa for 43 individual farms. The largest share holder owns 250 acres; several farms are over 100 acres; and the smallest is roughly 2 acres. There are no irrigation wells along the Ditch, as the entire water supply comes from surface flows. Most of the Ditch has not been surveyed, although Natural Resources Conservation Service (NRCS) has performed some soil analyses over the years. Two portions of the Ditch branch off from the main "elbow" forming a total of about 15 miles of laterals. The decreed water right (1855) for priority #3 in the Ditch is for 25cfs and 72.77 cfs for priority #178 which was added in 1870. ECDC is subject to the Rio Grande Compact. The San Antonio River and the Conejos River are considered a single system for Compact purposes, with priority #1 and #2 on the Conejos system, and #3 on the San Antonio system. In this region of southern Colorado, the San Antonio and the Ortiz area, all agriculture is totally dependent on surface water. Flood irrigation of meadows in this region provides generous recharge of the Rio Grande Basin aquifer, as it has for five generations.

If the Contracting Entity is different than the Applicant (Project Sponsor or Owner) please describe the Contracting Entity here. N/A

Part B. - Description of the Water Activity – Please Refer to Criteria and Guidance Document for Eligibly Requirements

1. Name of water activity/project:

SAN ANTONIO RIVER -- EL CODO DITCH DIVERSION REHABILITATION

What is the purpose of this grant application?

[ ] Environmental compliance and feasibility study

[ ] Technical Assistance regarding permitting, feasibility studies, and environmental compliance

[ ] Studies or analysis of structural, nonstructural, consumptive, nonconsumptive water needs, projects

Study or Analysis of:

- [ ] Structural project or activity
- [ ] Nonstructural project or activity
- [ ] Consumptive project or activity
- [ ] Nonconsumptive project or activity

[X] Structural and/ or nonstructural water project or activity

Project Description (repeated here from pg 14 for clarity and for orientation of the reader)

For the past 20 years agricultural productivity along the Ditch has been declining due to the effects of the deterioration, improper placement and poor design of the existing rock structure at this point of diversion. This has caused land owners many problems; has created difficulties for ECDC in diverting water in a timely manner; has severely eroded the main channel; has caused repeated flooding in nearby farms and communities; and has necessitated ongoing maintenance efforts which are expensive and dangerous and which have proven, for two generations, to be ineffective in curing the problem. There is now an urgent need to address the underlying causes of these long-standing deficiencies at the El Codo Ditch diversion, as they have been exacerbated by drought conditions and by repeated wash outs and flooding. Flows on the Ditch range from as high as 87 cfs in full flood to less than 10 cfs in the middle of summer. Little has been done, for a century and a half, to alter the physical characteristics of El Codo Ditch and its diversion, and almost all records of the Ditch, including original drawings and topographic maps, were destroyed in a courthouse fire in 1980.

This two-phase water activity (the Project) begins by using ECDC funds in early spring of 2009 for an urgently required Phase I. Work will address the severe erosion which has occurred at a point immediately upriver from the diversion where waters of the San Antonio threaten once again, as they did in 1992, to overtop the river bank, to leave the main channel, and to flow into the bed of an old arroyo, causing flooding throughout the ECDC system and threatening the community of San Antonio and surrounding farms. The bank will be stabilized and two J-hooks will be placed about 300' upstream of the diversion, where the rip-rap is located, in order to contain the flows and redirect them toward the center of the main channel. This will aid in preventing further erosion at that point and will stabilize the area most impacted by erosion, in preparation for the next phase of work. Funded by the Rio Grande Basin WSRA funds requested in this proposal, ECDC will pick up the Project again in the fall of 2009, with Phase II, in which the root cause of this long-standing problem will be eliminated. The problematic rock diversion structure in the main channel of the San Antonio will be replaced with an NRCS-engineered concrete Core, as described in Attachment B. This structure will be positioned at a different angle from the current rock structure, directing flows more effectively toward the Ditch Head Gate and also toward the Bypass Head Gate (Attachment C). This will greatly improve control of irrigation uses and stabilize river flows at the El Codo diversion. The existing old bypass gate, with its inadequate system of manually inserting or removing boards, will be replaced with a gear/screw-controlled metal Bypass Head Gate, providing optimal diversion effectiveness. The lower elevation of the new Core will allow passage of water in both normal and high water regimes, stabilizing flows, preventing the back-up of water, facilitating sediment transport, reducing the accumulation of woody debris, and facilitating the passage of fish in both directions.

2. Describe how the water activity meets these **Threshold Criteria.**

1. The water activity meets the eligibility requirements outlined in Part 2 of the Criteria and Guidelines.

   This proposal is eligible for funding under Senate Bill 06-179 because (1) it is being submitted for approval to the Rio Grande Basin Roundtable pursuant to article 75 of title 37, C.R.S.. This roundtable is the roundtable for the Rio Grande Basin, in which our proposed water activity will occur; (2) it meets the eligibility categories described below; and (3) we are requesting that our proposal be approved by the CWCB utilizing the criteria and guidelines jointly developed by the IBCC and CWCB.

- ECDC proposes an eligible water activity, as identified in Senate Bill 06-179, in that it is a structural water project.

- ECDC is an eligible entity in that it is a mutual ditch company classified under the U.S. tax code under section 501(c)(12).

- ECDC is requesting funds from the SB 179 **Rio Grande Basin Account** and is complying with applicable guidelines and deadlines.

2. The water activity is consistent with Section 37-75-102 Colorado Revised Statutes. The requirements/language from the statute is provided in Part 3 of the Criteria and Guidelines.

   - This water activity meets the eligibility requirements outlined in each of the bulleted items above, as required in Part 2 of the criteria and guidelines.

   - The water activity is consistent with Section 37-75-102 C.R.S. because this project does not supersede, abrogate, or otherwise impair the State's current system of allocating water within Colorado or in any manner repeal or amend the existing water rights adjudication system. This project does not affect the State constitution's recognition of water rights as a private usufructuary property right nor is it intended to restrict the ability of the holder of a water right to use or to dispose of that water right in any manner permitted under Colorado law.

     At the present time, the ECDC gets water into the Ditch by using heavy equipment to push rocks, gravel and dirt up into a temporary diversion dam. When high flows come down the San Antonio this dam washes out and must be rebuilt, causing a constant maintenance problem. Since there is no way to adjust the height of this makeshift dam, water backs up during high flows and causes flooding, which jeopardizes water rights on the San Antonio river system below the El Codo diversion. In effect, this Project upholds existing water rights and defends them against repeated loss from flooding due to ECDC having little or no control over seasonal flows of the San Antonio River and the effects of these flows upon allocated water rights.

3. The water activity underwent an evaluation and approval process and was approved by the Basin Roundtable (BRT) and the application includes a description of the results of the BRTs evaluation and approval of the activity. At a minimum, the description must include the level of agreement reached by the roundtable, including any minority opinion(s) if there was not general agreement for the activity. The description must also include reasons why general agreement was not reached (if it was not), including who opposed the activity and why they opposed it. Note- If this information is included in the letter from the roundtable chair simply reference that letter.

   - Included in a cover letter from the Chairman of the Rio Grande InterBasin Roundtable.

4. The water activity meets the provisions of Section 37-75-104(2), Colorado Revised Statutes. The requirements/language from the statute is provided in Part 3 of the Criteria and Guidelines.

- This water activity (the Project) meets the provisions of Section 37-75-104 (2) (c), C.R.S. in that ECDC has actively sought the input and advice of Conejos County Commissioners and all local affected rural communities and municipal governments. ECDC has especially focused on the community of landowners along El Codo Ditch who have suffered for 20 years from the burden of annual floods or threats of floods and the expense and difficulty of repeatedly rebuilding the present rock structure. ECDC has consulted Rod Ruybalid and John Alves at the Division of Wildlife, requesting information as to the potential impacts of this Project upon wildlife and upon the San Antonio fishery, both during construction and after completion. A letter from Craig Cotton P.E., acting Division Engineer with the Colorado Division of Water Resources, Division #3, is in Attachment D. ECDC has also met regarding this project several times over the past two years with Mike Sullivan, Division Engineer, as well as with water Commissioner Tom Stewart of the Antonito Office of the Division of Water Resources.

3. For Applications that include a request for funds from the Statewide Account, describe how the water activity meets the **Evaluation Criteria**. See Part 3 of Criteria and Guidelines.

This proposal **does not seek funds from the Statewide Account**, nonetheless, the following responses proceed to address the Evaluation Criteria as specified in Part 3 of the Criteria and Guidelines.

Promoting Collaboration and Cooperation

a. The water activity addresses multiple needs or issues, including consumptive and/or non-consumptive needs, or the needs and issues of multiple interests or multiple basis:

Multiple consumptive and non-consumptive needs have been identified by El Codo and by the land owners, water users and stakeholders on this reach of the San Antonio. This Project:

- Helps meet agricultural demands for a sustainable water supply, overcoming major difficulties in diverting irrigation water for 1,500 acres;
- Limits further damage to diversion and irrigation structures;
- Reduces the present and future risk of flooding and further channel deterioration;
- Improves fishery conditions by reducing sediment load, improving water quality, and creating two-way passage for fish;
- Improves riparian areas on the San Antonio by improving sediment transport, reducing log jams, stabilizing river banks, and creating more stable flows in the main channel;
- Supports the efforts of several land owners who have enrolled in contracts under the Continuous Conservation Reserve Program (CCRP) of the Farm Services Administration, fencing off some riparian areas along the San Antonio to prevent the grazing of domestic animals and to avoid damage to probable habitat of the southwestern willow flycatcher.
- Helps offset human impacts on the San Antonio, particularly those relating to futile efforts by land owners to fix the problem -- efforts which often exacerbate streambank instability;
- Benefits endangered and/or threatened species by preventing further stream bank erosion, reducing the risk of flood, and stabilizing riparian areas recognized as probable habitat for the southwest willow flycatcher along the San Antonio;
- Supports basin and interbasin cooperation by reducing the propagation of maintenance issues and optimizing existing and future water supplies for multiple irrigators on the El Codo Ditch.

- Promotes cost effectiveness and operational flexibility by greatly improving control of irrigation flows at the Ditch Head Gate and river channel flows at the Bypass Head Gate;
- Directly supports the ability of Colorado to fulfill its commitments by facilitating passage of mandated waters under the Rio Grande Compact in high water regimes by ensuring that these waters remain in the channel and reach the Los Sauces gauge.

b. The number and types of entities represented in the application and the degree to which the activity will promote cooperation and collaboration among traditional consumptive water interests and/or non-consumptive interests, and, if applicable, the degree to which the water activity is effective in addressing intrabasin or interbasin needs or issues.

- This Project brings together land owners and share holders affected by this Project through the proactive involvement of the Colorado Division of Wildlife, Conejos County Commissioners, Colorado Division of Water Resources Division III, and Natural Resources Conservation Service.
- Cooperation and collaboration with the Farm Services Administration and the Colorado Division of Wildlife are evidenced by the fact that several local land owners have established contracts with the CCRP program to limit grazing in riparian areas along the San Antonio. This program seeks to improve probable habitat for the southwest willow flycatcher.
- The Project addresses intrabasin and interbasin needs to recharge the aquifer by safeguarding the flood irrigation system of 1,500 acres served by El Codo Ditch Company.
- The Project will directly reduce the loss of Rio Grande Compact waters by preventing flows from the San Antonio from leaving the main channel and thereby missing the gauge at Los Sauces.

<u>Facilitating Water Activity Implementation</u>

c. How funding will reduce uncertainty that water activity will be implemented:

- Repeated efforts by ECDC to fund this project are described below in (h). Annual budgets for ECDC are based on assessments set by the members, all of whom are farmers and water users in this remote rural agricultural community, and these assessments are limited by economic capabilities of the company's stockholders and are influenced by what the local economy can bear. According to statistics from the San Luis Valley's Development Resources Group (CEDS 2002), Conejos County has three times the poverty level of the State average. With the Rio Grande Basin WSRA funds requested in this proposal, this project is assured. Without those funds this Project will not be possible.

d. Urgency of need:

- A serious flood occurred at this diversion in 1992. The rock diversion structure was completely washed out, sending an estimated 350 to 400 cfs pouring into the meadows, diverting flows of the San Antonio into a completely different ditch - the Poleo Ditch - and causing serious flooding of many homes and properties just south of County Road C. In response, ECDC put in the existing rip rap immediately above the diversion, replaced the previous diversion gate with the one which is currently being used, and installed the existing bypass gate with its system of inserting and removing

boards to regulate flows. Now, seventeen years later, all of these systems are failing, causing a very high risk of another flood. A map of the flood plain is included in Attachment E.

- The greatest urgency of this Project is based on the widespread recognition that all stakeholders have an extremely dangerous situation at this diversion. Current seasonal maintenance requires that landowners risk injury and death battling the log jams and debris, using long hooks to disentangle the mess, and sometimes falling into the water. A few years ago a ditch member was working to clear debris from the headgate when a log shifted and pulled him under the water. If a fellow worker had not grabbed his hand and pulled him to safety he would have drowned.
- ECDC must do everything possible to prevent injury or loss of life, to mitigate conditions that cause a high likelihood of flooding, and to regain control of the flows at this critical diversion on the San Antonio River.
- This Project will greatly decrease the local impact of any major Conejos River or Rio Grande flood event by helping to keep water in the main channel of the San Antonio.
- The direct effect of this Project is to allow El Codo Ditch Company irrigators to obtain their decreed water rights in priority, to be able to fulfill prior appropriations, to prevent the destruction of the irrigation system which serves forty three farms and more than 1,500 acres.
- It is urgent to protect Colorado's ability to meet its commitment to the Rio Grande Compact by preventing Compact waters from bypassing the Los Sauces gage.

e. Length of time needed to implement the water activity.

- Phase I of this 2-phase Project will be underway in March or April 2009, using ECDC's own funds, and will be completed within one month. Due to the urgency of preventing flooding, preparations for this first phase of channel stabilization are underway at the time of this writing. Given the damage created by high flows in 2008, it is urgent to place J-Hooks and to stabilize the bank. This will prevent flows of the San Antonio from overtopping the bank and entering the bed of the old arroyo, which would then trigger a repeat of the floods of 1992.
- This remedial and precautionary measure must be followed by the installation and re-positioning of the new diversion Core structure and by upgrading the Bypass Head Gate, in Phase II. This work will begin when the water recedes and before the ground begins to freeze, in late August or September, or as late as October of 2009. Phase II will be completed before the end of November, or in less than three months, provided that Basin funds under WSRA are available.

f. Expertise and ability of applicant to implement the activity.

- ECDC has the expertise and ability to successfully implement and complete the proposed activity. With 150 years of continuous water management and irrigation experience, Ditch members and land owners in this Project are intimately familiar with this point of diversion and its problems, and ECDC is prepared to execute this Project in a timely way, within budget. Both phases of the Project will be completed by Natural Progression Homes, LLC, the Contractor. (See below).
- Implementation of Phase I involves installing the well known J-Hook technology according to specifications developed by NRCS. Attachment F contains engineering drawings for J-Hooks on private property just downstream from this Project, but the technology is identical. The Contractor has knowledge of the river and the equipment, personnel, and experience to complete this river-channel work according to NRCS specifications.

- Phase II implements the design and engineering of the concrete Core, and installs the gear/screw-driven metal gate for the Bypass Head Gate, with Project oversight by NRCS. Photographs provided by Josh Waters, CEO of Natural Progression Homes, LLC are in Attachment G, showing the recent construction and completion of a similar installation on Capulin Ditch #6.
- The Contractor was recommended by the NRCS La Jara office and submitted the winning bid. This company has a good reputation not only for concrete work but also for stream bank stabilization, river reshaping, and channel work on similar projects in this region. Their quote was superior to three others which ECDC considered, and their operators have the experience, the equipment, and the required expertise to implement this Project. The Contractor is also familiar with this reach of the Conejos and is a respected local farmer.

g. Matching funds and/or funding from other sources

• Engineering and Project oversight by NRCS	$11,000
• ECDC funds for Phase I work	$12,445
Total Matching funds	$23,445
Percent of Total Project	27%
Percent of Basin WSRA funds requested	36%

h. Demonstrated need for financial assistance based on inability or difficulty obtaining funding elsewhere.

- ECDC has made numerous efforts to fund this project, including attempts to leverage the most favorable bids from contractors by negotiating matching amounts from NRCS and by pursuing loans, but the company has not had success with either of these approaches. At one point ECDC was approved for a loan by the Guadalupe Parish Credit Union on the basis of NRCS offering contribution of $21,000, but the lowest bid obtained at that time was $80,000.00 which would have required ECDC to commit to paying out $60,000, which was beyond the company's scope. On another occasion the company obtained a reasonable bid and again pursued a loan, but the bank would not extend credit beyond 10 years due to ECDC's not having collateral. This would have cost $8,000 per year, which again would have caused a heavy financial burden, especially since most of the landowners have small acreages, from 1 to 10 acres, and for them the assessment would have been very heavy. ECDC's annual budget is based on assessments set by the members, farmers and water users in Conejos County, where the poverty level is three times that of the State average. The opportunity to obtain Rio Grande Basin funds and to complete this project in this year is a godsend. With the funds we request in this proposal from the Rio Grande Basin Account, this project is assured. Without those funds this Project will not be possible.

Meeting Water Management Goals and Objectives and Identified Water Needs

i. The water activity helps complete a needs assessment, including consumptive and/or non-consumptive needs, that was not fully funded from other sources.

- The Rio Grande Interbasin Roundtable recently submitted its "Response to IBCC" expressing its basin-wide vision of current and future consumptive and nonconsumptive water needs. This vision is "based on

the current conditions and … collective plans and actions to have a sustainable water resource while recognizing Colorado Water Law." The water activity in this Project reflects the thinking and materially addresses the fact that even in wet years, water in the Basin is limited because of Colorado's delivery obligations under the Rio Grande Compact. This Project materially contributes to keeping water in the Basin and to meeting the agricultural and environmental needs in the San Antonio River watershed.

- ECDC offers this Project as an example of this Basin's efforts to responsibly manage its natural water supplies and to satisfy changing demands within the Basin to support economic, environmental, and community values.
- This Project implements the Rio Grande Interbasin Roundtable strategy to (1) bring the Rio Grande Basin water supply and demand into balance and (2) keep all possible water within the Rio Grande Basin. This Project, by rehabilitating the diversion structures and curing the long-standing problems at the El Codo Ditch diversion, brings water supply and demand into better balance as follows:
    - Sustainably meeting agricultural demands
    - Increasing the ability of ECDC to divert water rights in priority for 1,500 primary irrigated acres
    - Providing environmental enhancements to fish habitat
    - Improving riparian areas by reducing sediment load and woody debris
    - Facilitating two-way passage of fish
    - Reducing the very high likelihood of flood
    - Stabilizing flows of the San Antonio River, thus keeping all possible water within the Basin
    - Demonstrating the wise use of water resources to support the Basin's agricultural economy
    - Optimizing the natural hydrology of flood irrigation to replenish the Basin's aquifer
    - Promoting efficiencies which directly reduce Rio Grande Compact curtailments
    - Protecting from loss of Basin water which would otherwise bypass the Los Sauces gauge
    - Defending senior water rights of five generations of farmers who depend on surface irrigation
    - Improving agricultural profitability and discouraging the selling of water rights for financial gain
    - Preparing a historic ditch company to more adequately adapt to changing supply and demand
    - Giving needed operational flexibility so as to meet future uncertainties of water supply
    - Promoting in-basin storage and water quality

j. The water activity meets one or more of the nine water management objectives of the Statewide Water Supply Initiative (SWSI); helps implement projects and processes identified as helping meet Colorado's future water needs, and/or addresses the gap areas between available water supply and future need as identified in the SWSI or the Rio Grande Interbasin Roundtable's basin-wide water needs assessment done in accordance with the Colorado Water for the 21st Century act.

This Project meets the following water management objectives identified in the Statewide Water Supply Initiative (SWSI): (this question requires repeating some of the previous information)

- Sustainably meets agricultural demands by increasing the ability of ECDC to divert water rights when they are in priority for 1,500 primary irrigated acres of farmland;
- Provides for environmental enhancements to fish habitat by reducing sediment load and woody debris, facilitating two-way passage of fish, and stabilizing flows of the San Antonio River;
- Provides operational flexibility by reducing the high maintenance costs associated with constantly building and repairing the old core, thus preventing further deterioration of diversion structures.
- Enhances wildlife habitat by creating more stable riparian areas in the regions affected by this

diversion, particularly for areas which are probable habitat for the southwest willow flycatcher.
- Protects the cultural values inherent in five generations of continual surface water farming in a region which first relied on the historic *acequia* irrigation system typical of early Spanish settlements;
- Protects and enhances downstream recreational resources which are of high value to families who enjoy hunting, fishing and outdoor activities along the San Antonio and further downstream on the Conejos;
- Complies with all applicable laws, regulations, and water rights.

k. The water activity promotes water conservation and efficiency.

In addition to multiple examples given above, this Project:

- Reduces water loss by increasing the operational efficiency of ECDC, enhancing the company's ability to control flows at the diversion;
- Installs a structure which will enhance riparian stability on the main channel for probably the next 100 years;
- Increases channel capacity, stabilizes channel boundaries, slows bank erosion, and prevents loss to the combined San Antonio and Conejos systems;
- Corrects channel instability and streambank erosion at this diversion, preventing further loss on both sides of the river bank, reducing the risk of flood;
- Supports Colorado's ability to meet its Rio Grande Compact obligation.

l. The applicant has an existing water conservation plan.

- Although ECDC does not in itself have a water conservation plan, it supports water conservation practices and policies of the Conejos Water Conservancy District.

m. The water activity will make new water available for use.

- This Project does not create "new" water, but recovers water which has repeatedly been lost, every year, due to a deficient diversion structure;
- Perhaps "new" water becomes available for use by capturing water which as repeatedly been lost from the main channel of the San Antonio due to flood;

n. The water activity involves reoperation, enlargement, or rehabilitation of existing facilities.

- This is a rehabilitation project whose primary objective is to improve operational efficiency.
- Existing facilities have failed, causing many problems which are addressed by this Project.

<u>The Water Activity Addresses Issues of Statewide Value</u>

o. The water activity helps sustain agriculture and open space or meets environmental or recreational needs.

This water activity:

- Helps sustain agriculture in one of Colorado's most productive regions by ensuring the delivery of irrigation water, in priority, for cash crops and for livestock industry forage.
- Recovers water which irrigators in this system have been entitled to since the late 1800s, but which ECDC, for the past 20 years, has not been able to divert, causing farmers not to get their full decreed water right, especially when water levels are low, later in the year.
- The sediment loading at this diversion point is primarily caused by lateral movement of the channel in high water regimes, resulting in loss of stream bank stability, damage to diversion structures, degradation of the riparian habitat, and by deposition of bed-load materials and woody debris in the main channel of the San Antonio. Correcting these problems directly benefits the fishery.
- Safeguarding from the risk of flood benefits many local recreational fishing and downstream recreational assets which are valued by the public and by tourists.
- Enhancing channel stability, reducing the incidence of bank erosion, and facilitating the transport of sediment and woody debris all combine to nourish dense willow patches and other vegetation in riparian areas along the San Antonio and the Conejos, thus directly benefiting the habitat of many species, including the probable habitat of the endangered southwest willow flycatcher.

p. The water activity assists in the administration of compact-entitled waters or addresses problems related to compact entitled waters and compact compliance and the degree to which the activity promotes maximum utilization of state waters.

- This Project preserves the integrity of irrigation flows diverted into the El Codo Ditch from the San Antonio as well as the river's main channel flows which are controlled by the Bypass Head Gate. After irrigating 43 farms in a highly productive 1,500-acre area, the flows return again to the San Antonio, and thence to the Conejos, to fulfill Colorado's obligation to the Rio Grande Compact. The rehabilitation of this diversion system directly benefits consumptive and nonconsumptive uses of these compact-entitled waters.
- This project assists in the administration of these Compact-entitled waters by increasing operational flexibility and directly addressing problems related to Compact compliance.
- This Project, as demonstrated above, promotes maximum utilization of state waters.

q. The water activity assists in the recovery of threatened and endangered wildlife species or Colorado state species of concern.

- ECDC has communicated with John Alves, Colorado Division of Wildlife aquatic biologist, regarding potential impacts of this Project on the Rio Grande Chubb, and the Contractor is familiar with NRCS guidelines and measures to be taken to support flows in the river for fish habitat.
- The Rio Grande Conservation District has created a San Luis Valley Habitat Conservation Plan in order to benefit the southwestern willow flycatcher and other bird species. Also, in 2009, NRCS in Colorado will again focus Wildlife Habitat Incentive Program (WHIP) funding on larger scale habitat developments, such as those on the Conejos River, that achieve the WHIP program goal of enhancing and protecting habitats for wildlife species experiencing significant population declines. WHIP is a voluntary program for people who want to develop and improve wildlife habitat primarily on private land. These programs encourage land owners to participate in habitat conservation efforts throughout

the more than two million acres of the San Luis Valley's five counties, including Alamosa, Conejos, Costilla, Rio Grande, and Saguache. Many environmentally conscious private land owners along the San Antonio, who are members of ECDC, and also along the Conejos, participate in these programs or have CCRP contracts to prevent domestic animal grazing in riparian areas. This Project supports all of these efforts, especially important in a region where most land is privately owned.

- Restoring river stability and maintaining channel capacity at the El Codo Ditch diversion will help to protect the riparian habitat conservation focus area below Antonito, identified in the Rio Grande Habitat Conservation Plan.
- This Project will enhance the stability of riparian habitat areas along the San Antonio and downstream on the Conejos River, probable habitat for the southwestern willow flycatcher.
- Restoring the stability of this reach of the river and improving the health of riparian areas through the installation of J-Hooks and an NRCS-designed Core will contribute significantly to the recovery of threatened and endangered wildlife.

r. The water activity provides a high level of benefit to Colorado in relationship to the amount of funds requested.

- As described above, this Project provides a high level of benefit to Colorado and to its downstream Compact neighbors by repairing structures which have failed to function as originally designed.
- The most significant and valuable benefit of this project, in addition to those listed above, is its ability to support Colorado in meeting its Compact obligations.
- The amount of funds requested, $65,000.00 includes a continuing commitment by ECDC to monitor and to maintain these installations for decades into the future.
- This Project matches 27% of the Total Project Cost and 36% of the requested WSRA Basin funds.

s. The water activity is complementary to or assists in the implementation of other CWCB programs.

- This water activity supports the Rio Grande Basin's emphasis on sustainability, on recharging the Basin's aquifers, and on meeting the Basin's water management goals, as discussed above in (i).
- In general and specifically, this Project supports many other CWCB programs, as follows:

    - The Rio Grande Headwaters Restoration Project has made one of its objectives the maintenance and improvement of water quality in the Rio Grande. This Project also aims to reduce sediment loading and improving water quality at this diversion on the San Antonio.
    - With five generations of farming supported exclusively by flood irrigation and surface waters, the above discussion details how this Project supports the in-Basin objectives of the Rio Grande Interbasin Roundtable, the needs identified in SWSI, and the objectives of CWCB's Water Supply Reserve Account.

t. The water activity helps support the State's economic vitality and competitiveness in national and international markets.

- Agriculture represents $143,637,000, or 37.9 percent of the San Luis Valley's base economy (SLV Development Resources Group, CEDS 2002). Tourism accounts for $43,508,000, or 11.5 percent of base industry income in the Valley, with a major portion of these revenues derived from recreational boating and fishing in Conejos County. This water activity directly supports the economic vitality and competitiveness of both agricultural and recreational resources in southern Colorado by preventing flood, improving river stability, nourishing the fishery, satisfying agricultural needs, and enhancing the health of habitat areas which are important to many species.
- Forty three farms in a highly productive 1,500-acre area rely upon this diversion to irrigate this region of Conejos County.
- This Project directly impacts the State's economic vitality and competitiveness in national and international markets by meeting agriculture's irrigation needs and by helping to maintain a healthy river system for the environment, for wildlife, and for world-class recreational assets in the region.

(This concludes the portion of this proposal dedicated to meeting Evaluation Criteria)

4. Please provide an overview of the water project or activity to be funded including – type of activity, statement of what the activity is intended to accomplish, the need for the activity, the problems and opportunities to be addressed, expectations of the participants, why the activity is important, the service area or geographic location, and any relevant issues etc. Please include any relevant TABOR issues that may affect the Contracting Entity.

- For the past 20 years agricultural productivity along the Ditch has been declining due to the effects of deterioration, improper placement and poor design of the existing rock structure at this point of diversion. This has caused land owners many problems; has created difficulties for ECDC in diverting water in a timely manner; has severely eroded the main channel; has caused repeated flooding in nearby farms and communities; and has necessitated ongoing maintenance efforts which are expensive, dangerous and which have proven to be ineffective in curing the problem.

- There is now an urgent need to address the underlying causes of these long-standing deficiencies at the El Codo Ditch diversion, as they have been exacerbated by drought conditions and by repeated wash outs and flooding. Flows on the Ditch range from as high as 87 cfs in full flood to less than 10 cfs in the middle of summer. Little has been done, for a century and a half, to alter the physical characteristics of El Codo Ditch and its diversion, and almost all records of the Ditch, including original drawings and topographic maps, were destroyed in a courthouse fire in 1980.

- This two-phase water activity (the Project) begins by using ECDC funds in early spring of 2009 for an urgently required Phase I. Work will address the severe erosion which has occurred at a point immediately upriver from the diversion where waters of the San Antonio threaten once again, as they did in 1992, to overtop the river bank, to leave the main channel, and to flow into the bed of an old arroyo, causing flooding throughout the ECDC system and threatening the community of San Antonio and surrounding farms.

- The bank will be stabilized and two J-hooks will be placed about 300' upstream of the diversion, where the rip-rap is located, about 100' feet apart, in order to contain the flows and redirect them toward the center of the main channel. This will aid in preventing further erosion at that point and will stabilize the

area most impacted by erosion, in preparation for the next phase of work.

- With Rio Grande Basin WSRA funds requested in this proposal, ECDC will start Phase II of the Project in the fall of 2009, in which the root cause of this long-standing problem will be eliminated. The problematic rock diversion structure will be replaced with an NRCS-engineered concrete Core (Attachment B). This structure will be positioned at a different angle from the current rock dam, directing flows more effectively toward the Ditch Head Gate and the Bypass Head Gate (Attachment C), greatly improving control of irrigation uses and main channel flows.
- The existing old bypass gate, with its inadequate system of manually inserting or removing boards, will be replaced with a gear-controlled metal Bypass Head Gate, providing optimal diversion effectiveness. The lower elevation of the new Core will allow passage of water in both normal and high water regimes, stabilizing flows, preventing the back-up of water, reducing the accumulation of woody debris, and facilitating the passage of fish in both directions.

- This is a structural water activity intended to rehabilitate the irrigation and bypass water control systems and structures located at the El Codo Ditch diversion on the San Antonio River, with the primary purpose of preventing flood and improving operational flexibility for the El Codo Ditch Company on behalf of the environment, wildlife, recreation, and 43 farms which have depended on flood irrigation for five generations. There are no TABOR issues involved.

5. Please summarize the proposed scope of work. Please refer to Part 2 of the Criteria and Guidance document for detailed requirements.

   The scope of work should outline by task how the water activity will be accomplished. It is important that the scope of work detail the specific steps, activities/procedures that will be followed to accomplish the water activity and the specific products/deliverables that will be accomplished. The scope of work should include but not be limited to: task description, key personnel, budget, schedule and deliverables and the final report/project documentation upon completion of the water activity.

A. Scope of Work – Photographs demonstrating a project very similar to this one, which was recently completed by the Contractor, are in Attachment G.

(next page)

Water Supply Reserve Account – Grant Application Form
Form Revised May 2007

Phase I -- Spring time 2009

Task I	Mobilize – Move 50 Cu Yds of Rock for J-Hooks Rock at old core re positioned, augmenting J-Hooks
Task II	Excavator – Shaping of river River bank and channel stabilization per NRCS specs
Task III	Install J-Hooks – 42 excavator hours
Task IV	Backfill and Final grade

Phase II -- September – October 2009

Task I	Mobilization – complex entry – equipment access Diverting water and pumping, per DOW & NRCS specs
Task II	Concrete Core construction
Task III	Heating & blanketing of concrete
Task IV	Install Sluice Gate
Task V	Demobilization

III. Budget

Net Project Cost

Total Project Costs – Less Matching & In-Kind					
	Labor	Quantity	Direct costs	Matching Funds	Total Project Costs
Phase I – J-hooks					
Rock 50 cu yd 75 tons		50 cu y 75 tons	825.00	850.00	850.00
Mobilization of rock w Truck		12.5	140.00	1,750.00	1,750.00
Shaping of river – Excavator hrs		100 yds 12.5	140.00	1,750.00	1,750.00
Install 2 J-hooks – Excavator hrs		42	140.00	5,880.00	5,880.00
Backfill & final grade – Exc. hrs		16	140.00	2,240.00	2,240.00
Matching Subtotal Phase I				**$ 12,445.00**	
TOTAL PHASE I					**$ 12,445.00**
Phase II – Diversion Structure					
Mobilization – Access			2,000.00		2,000.00
Concrete including labor		60 yards	130.00		7,800.00
Metal		29.81 tons	400.00		11,924.00
Gravel		21.43/ton delivered	28.00		600.00
Equipment – Excavator		91 hrs	140.00		12,740.00
Diverting water & pumping			900.00		900.00
Heating & blanketing concrete			1,400.00		1,400.00
Labor/Overhead 5 men		8 hrs/day x 45 days	25,955.00		25,955.00
Sluice Gate Work			500.00		500.00
Demobilization			1,000.00		1,000.00
TOTAL PHASE II					**$ 64,819.00**
In-Kind Contributions					
NRCS – Engineering	$ 9,000.00			$ 9,000.00	$ 9,000.00
NRCS – J-hook design	$ 2,000.00			$ 2,000.00	$ 2,000.00
Matching subtotal Phase II				**$ 11,000.00**	
TOTAL PROJECT COST					**$ 88,264.00**
TOTAL MATCHING FUNDS				**-23,445.00**	
NET PROJECT COST					**$ 64,819.00**

IV. Schedule

Phase I Early spring, 2009 – less than two months.
Phase II September - October 2009, ending November, 2009.

(return to previous numbering system)

6. Water Availability and Sustainability – this information is needed to assess the viability and effectiveness of the water project or activity. Please provide a description of each water supply source to be utilized for, or the water body to be affected by, the water activity. For water supply sources being utilized, describe its location, yield, extent of development, and water right status. For water bodies being affected, describe its location, extent of development, and the expected effect of the water activity on the water body, in either case, the analysis should take into consideration a reasonable range of hydrologic variation.

- The El Codo Ditch originates on the San Antonio River less than a mile north of the New Mexico border. Since the 1850s the main section of the Ditch diverts water from the San Antonio to meet agriculture needs, then rejoins it after about 7 miles, forming *el codo* or "the elbow" of surface water which irrigates staple crops of hay and alfalfa for 43 individual farms in an area of 1,500 acres. Early maps and surveys were lost in a fire, but an electronic map of the water supply sources, shown in Attachment E, refer to the "El Coda" ditch, and many records today still carry that mistaken translation of the Spanish name. There are no irrigation wells along the ditch, as the entire water supply comes from surface flows. The San Antonio drainage is subject to the Rio Grande Compact, with flows of the San Antonio joining the Conejos just before reaching the Los Sauces gage, with priority #1 and #2 on the Conejos system, and #3 on the San Antonio system. Water availability and sustainability are issues which lie at the heart of this project. The Conejos River has an annual average flow of 200,000 acre feet. The Rio Grande Compact requires an average of 45% of the Conejos' upper index, including transportation losses getting the flow to Los Sauces and to the Conejos' lower gauge. In high flow regimes, and particularly when the El Codo diversion floods, the Compact wins and Colorado loses. For this reason, gaining control over flows for irrigation together with upgrading the Bypass Head Gate to maintain flows in the main channel are critical to Colorado and to keeping water in the Rio Grande Basin. This Project, combined with numerous and well informed conservation efforts by landowners, such as through the CCRP and WHIP programs, will significantly diminish the incidence of river bank washouts and flooding. The private land owner directly downstream from the Diversion is also installing NRCS-designed J-Hooks to stabilize the channel. El Codo Ditch Company has a decreed water right (1855) for priority #3 in the Ditch of 25cfs and an additional priority #178 for 72.77 cfs which was added in 1870.

- The location of the diversion is in the Ortiz area of southern Colorado, with the Ditch taking its supply of water from the San Antonio River through a headgate on the north bank, near the middle of the North line of Section 19. Per copies of adjudications in Attachment A, the Ditch allows for diverting "so much water as will flow in a ditch 6 feet wide, and 1 foot deep, with a grade of 5 inches to the 100 feet." (August 1855) The first enlargement of the Ditch for 72.77 cfs specifies the location as "at a point which is from the southwest corner of Section 18, Township 32 north, Range 9 East, North 82 degrees 25' east, 2502 feet distant."

- The extent of development is primarily agricultural, serving 43 farms which range from 2 acres to 250 acres, with several being over 100 acres. The expected effect of the water activity on the San Antonio River during construction will be guided by the direct supervision of Engineer Pete Gallegos from the NRCS office in La Jara. The Contractor is experienced, and familiar with the need to keep a minimum flow in the stream to preserve fish habitat during construction time. The deliverable of this Project will be to restore ECDC's ability to meet agricultural needs, to greatly

reduce the risk of flood, to significantly benefit the San Antonio watershed and downstream recreational and environmental assets, and to prevent Rio Grande Compact waters from bypassing the Los Sauces gage.

7. Please provide a brief narrative of any related or relevant previous studies.

- A study was done by faculty and senior hydrology students from Colorado State University entitled "*Investigation of Methods for Increasing the Efficiency of El Codo Ditch: A Study by Canal Recovery Systems, Inc*." (CRS). The CRS research team made two trips from Pueblo to El Codo Ditch in early February and in April, 2003. The students conducted surveys, gathered water data on elevation profiles and flow rate profiles for the length of the Ditch, did GIS/GPS readings, and took soil samples from the elevated section of the Ditch and analyzed them in the Graduate Geotechnical Laboratory at CSU. Their study concluded with several suggested measures for increasing the efficiency of the Ditch and its laterals. The young scientists identified the advantages of "installing a concrete gravity dam" and upgrading the bypass gate – as this proposal does also, but they felt it was too expensive an alternative. They were right. The study serves as a valuable contribution to an otherwise empty hydrological record of the Ditch. It is nicely documented and well done, but the primary conclusion, that the ditch and its laterals should be lined with concrete, did not get an "A" from El Codo Ditch Company and the friendly locals -- perhaps because no textbook solution can replace 150 years of intimate river knowledge.

8. Additional Information – If you feel you would like to add any additional pertinent information please feel free to do so here. (Comments of a farmer):

"Here in the communities of San Antonio and Ortiz, because of our proximity to the foothills, we are right in the middle of the recharge zone. When we flood irrigate, it is obvious that we are recharging the aquifer because we can see the way the water runs across there, once there is some recharge, in the second or third irrigation. What's been happening since the drought of 2002 is that it has been taking longer to make that first irrigation get around to all the land owners. That's because that first irrigation is mostly filling up the aquifer. It is very clearly visible."

The above statements are true to the best of my knowledge:

Signature of Applicant:

Print Applicant's Name:

Project Title:

Return this application to:

Mr. Todd Doherty
Intrastate Water Management and Development Section
COLORADO WATER CONSERVATION BOARD
1580 Logan Street, Suite 600
Denver, CO 80203

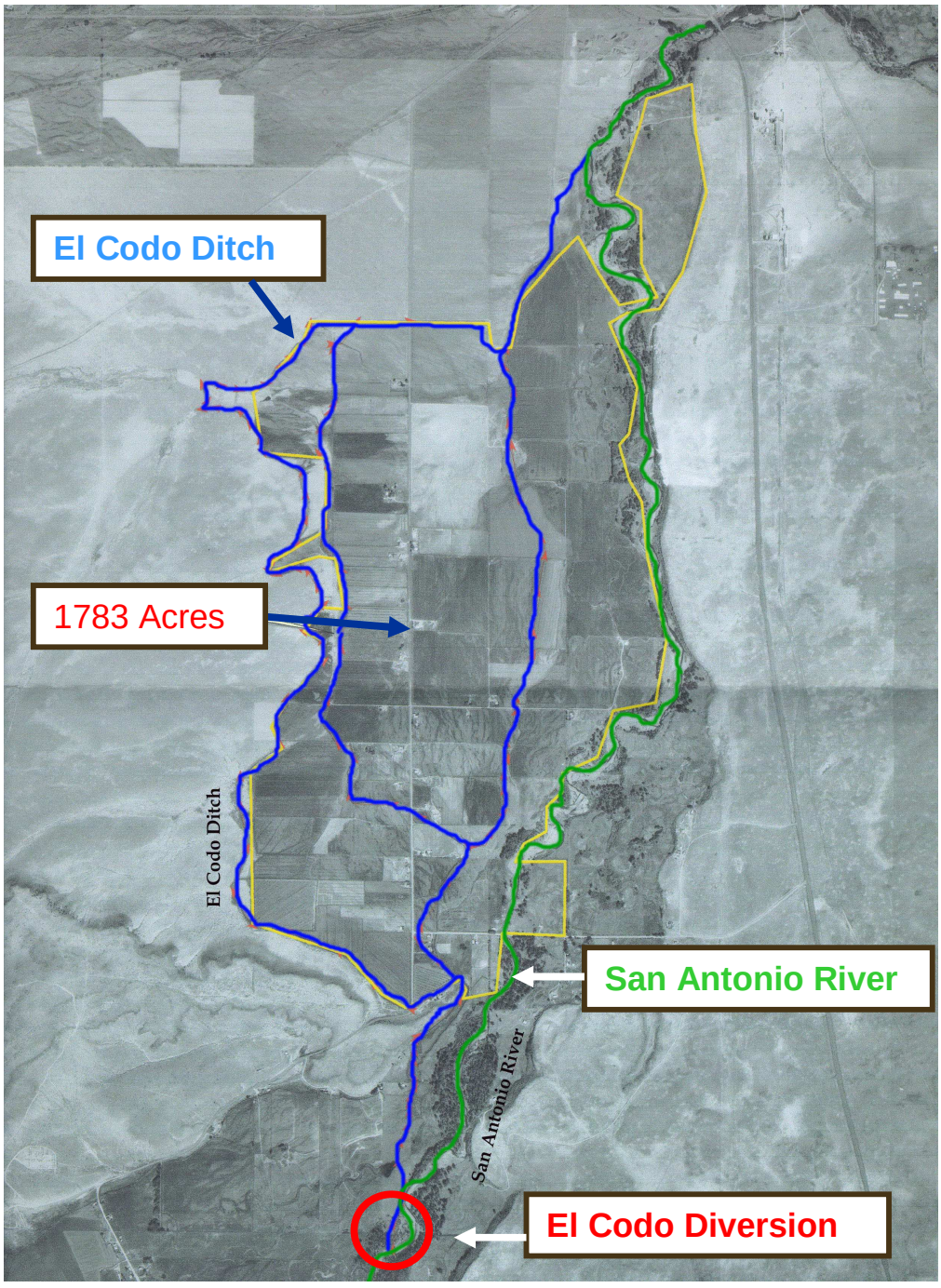
To submit applications by Email, send to: todd.doherty@state.co.us

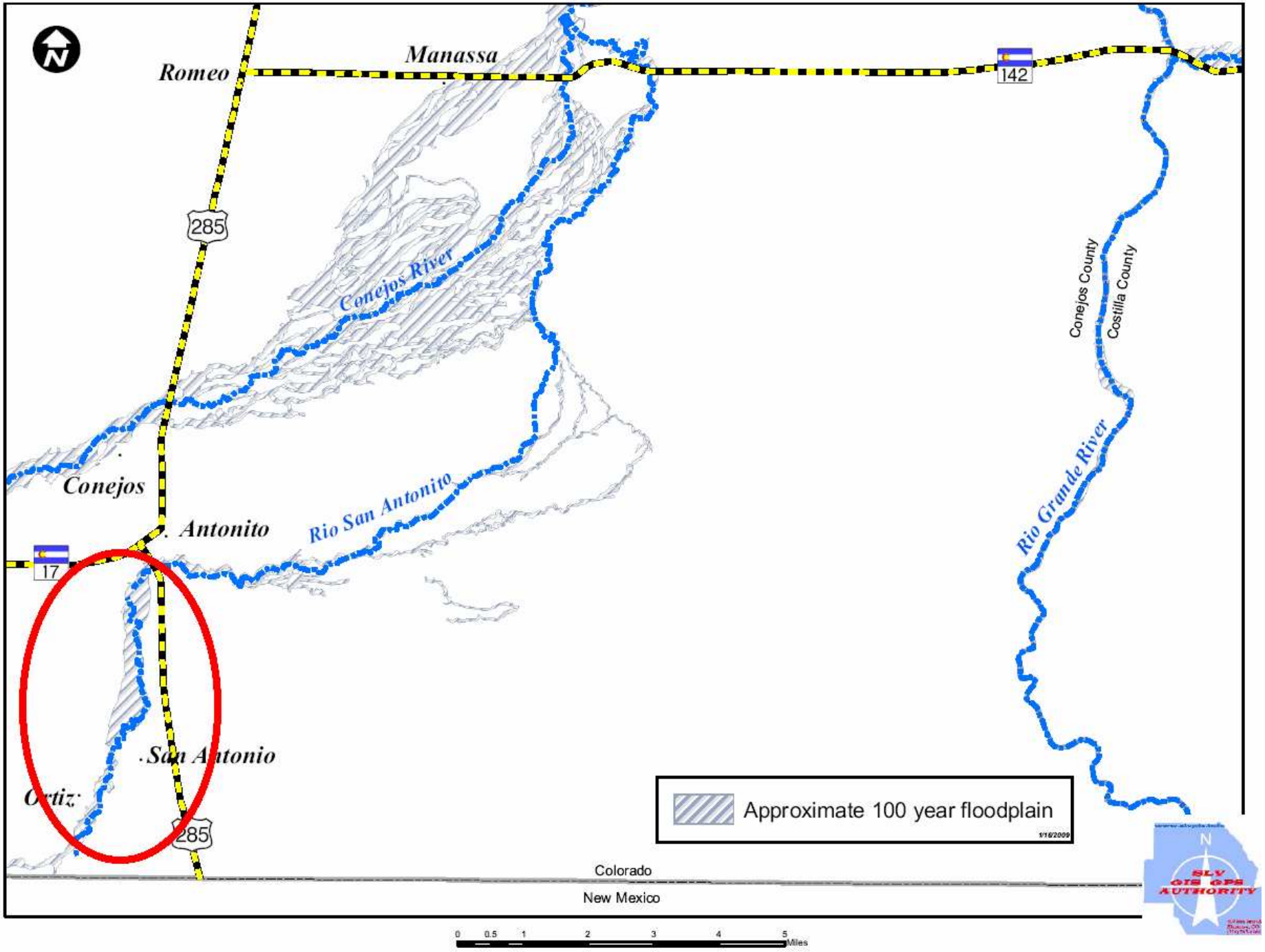
LIST OF ATTACHMENTS

A	Location of El Codo Ditch and Documentation of Water Rights
B	NRCS Engineering Studies
C	Schematics and Photos of El Codo Ditch
D	Division of Water Resources – Divison #3 Engineer's Assessment
E	"El Coda" Ditch and San Antonio River Flood Plain Map
F	J-Hook Technology
G	Contractor: Natural Progresson Homes, LLC – Job Quote & Photos of Similar Job
H	Additional Photos

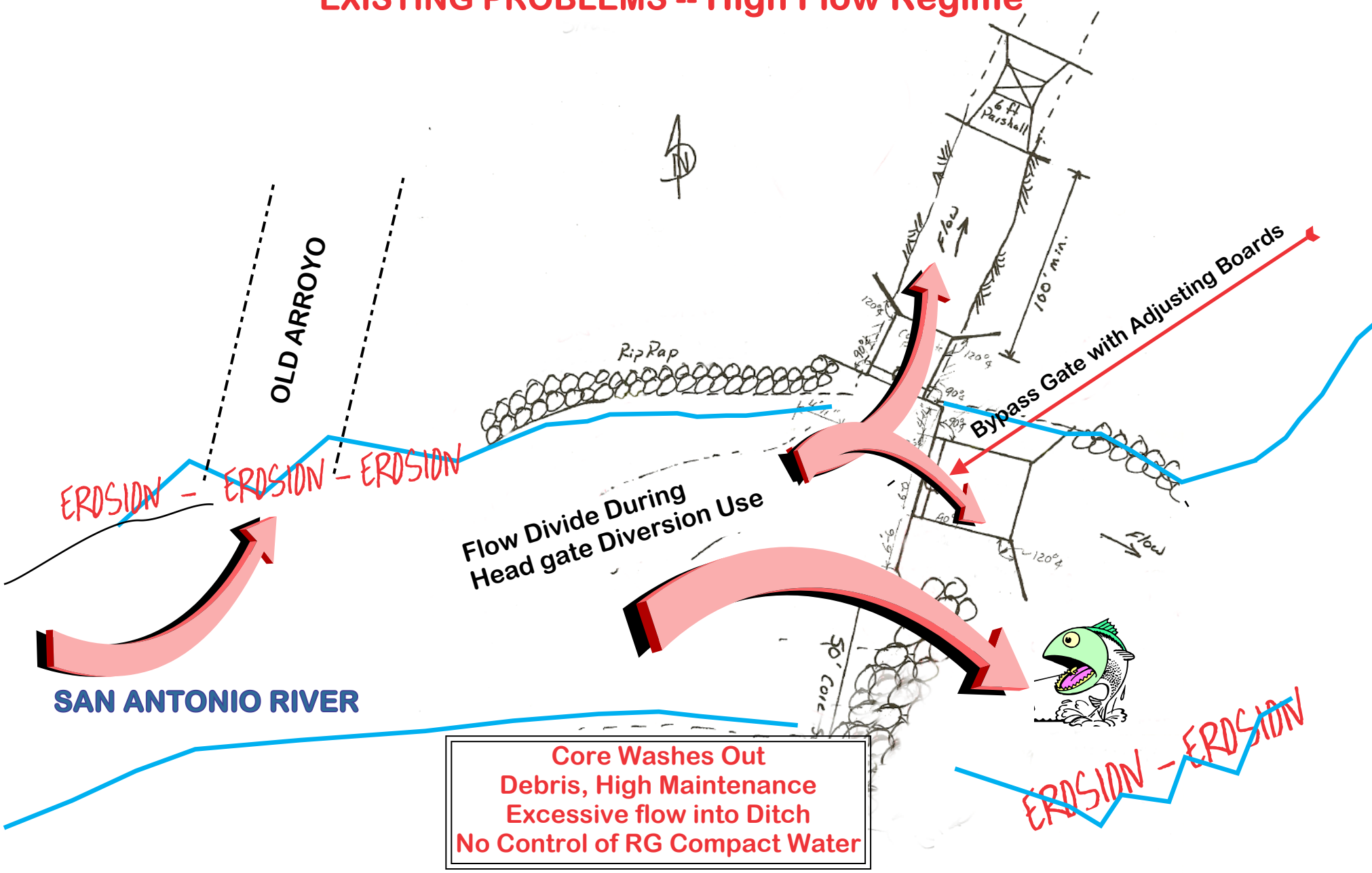

17
Guadalupe
Conejos
Antonito
Obatos
Fox Creek
Las Mesitas
Mogote
Paisaje
17
17
Canon
San Antonio
A
Ortiz
285
Colorado
New Mexico
285
©2008 Google
Map data ©2008 Tele Atlas

El Codo Ditch Company Irrigation system




Romeo
Manassa
142
285
Conejos River
Conejos County
Costilla County
Rio Grande River
Conejos
Antonito
Rio San Antonito
17
San Antonio
Ortiz
285
Approximate 100 year floodplain
1/16/2009
Colorado
New Mexico
0 0.5 1 2 3 4 5
Miles
N
SLV GIS GPS AUTHORITY

San Antonio River - El Codo Ditch Diversion
Core and Headgate Structures
EXISTING PROBLEMS -- High Flow Regime



Core Washes Out
Debris, High Maintenance
Excessive flow into Ditch
No Control of RG Compact Water

San Antonio River - El Codo Ditch Diversion
Core and Headgate Structures
S.B. 179 Project > Solution