



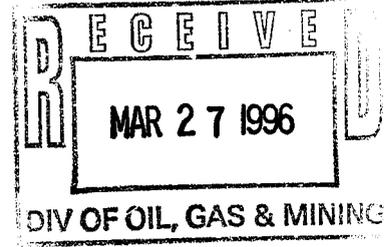
**CYPRUS PLATEAU
MINING CORPORATION**
A Cyprus Amax Company

Cyprus Plateau Mining Corporation
Post Office Drawer PMC
Price, Utah 84501
(801) 637-2875

March 20, 1996

ACT/007/038 file #2

Ms. Michele Waltz
U.S. Army Corps of Engineers
1403 South 600 West, Suite A
Bountiful, UT 84010



Dear Ms. Waltz,

**RE: RESPONSE TO UTAH DIVISION OF WILDLIFE RESOURCES COMMENTS ON
WILLOW CREEK PERMIT APPLICATION**

This letter responds to the Division of Wildlife Resources (DWR) comments on the Willow Creek application as directed in your letter of March 8, 1996. Our responses are made considering the discussions held in the meeting on March 12, 1996 with yourself, Bill Bates and Bill Bradwisch, of the DWR, and Steve Johnson of the Utah Division of Oil, Gas and Mining (UDOGM), and the meeting held on March 20, 1996 at the site with yourself, Bill Bates, Kevin Christopherson, Mark Page, Casey Ford, Marvin Boyer, and Greg Mladenka.

Each item in the DWR letter will be addressed by number. In addition, the issue of construction during high flow will be addressed.

- Item 1a. The relocated stream sections are acceptable as designed with exception of the channel immediately below the 96" culvert. This section of channel will be redesigned to provide a straight section immediately below the culvert to prevent adverse affects to the channel bank. The west end of the culvert will be moved to the south to provide a better alignment of the channel (see Exhibit A).
- Item 1b. The riffle/pool ratio has been designed to be comparable to the existing channel. The riffle/pool ratio is acceptable as designed.
- Item 1c. Even though habitat features including overhangs and boulders that provide fish holding areas are limited in the existing stream, Cyprus commits to constructing these features in the relocated stream sections. The stream evaluations conducted by Cyprus' consulting biologist found few quality fish holding areas including overhangs, undercut banks and boulder holes. A qualified geomorphologist or other individual

acceptable to the DWR and the Corps will be retained by Cyprus to advise the construction crews on placement of boulders and other features as necessary to provide habitat for fish. This individual will be consulted as soon as possible to have input into the design of the channels. The individual will be on site on an as needed basis during the project.

Item 1d. A flood plain is going to be created where none exists now. The new stream channel should be an improvement over the existing channel. The slope of both relocated sections are of uniform gradient, the proposed design is acceptable.

Item 1e. The relocated stream channels will not adversely affect the natural channel attributes above or below the site if the design jointly agreed upon is implemented.

To prevent sediment loss from beneath the riprap armoring in the Bank Full Width zone, a 12 inch thick layer of clean gravel will be placed below the riprap (1"X4" size). This layer is believed to prevent piping of the soils from beneath the riprap. Monitoring of this treatment will be done to evaluate the effectiveness of the gravel. If the riprap and gravel do not silt in during the 1996 spring through fall time period, a decision will be made by the agencies and Cyprus on what actions to take to remedy the situation. One possible alternative discussed at the March 20 meeting is to fill the void space between the riprap with gravel to slow down the flow of water which should drop out sediment and silt in the void spaces.

Item 2. Willow clumps will be salvaged from existing willows during construction for planting in the riparian zone of the new channels. In addition, willow seedlings will be planted in the riparian zone as indicated on the design drawings. Seedling planting timing will depend on availability of seedlings and will be done during the first available planting season, preferably immediately after construction during the spring of 1996. Cottonwood tree pole plantings will also be made in the riparian zone during initial construction. Cottonwood seedlings will also be planted at the same time as the willow seedlings addressed previously.

Item 3. Native plants as addressed in item 2 above will be used where available. Seeds will be obtained from native seed suppliers. The seed mixes are included in the application.

Item 4. As discussed in the meetings, topsoil will be placed on top of the riprap armoring during initial construction this spring in the Zone of Upland Plantings to provide a seedbed for vegetation. No topsoil will be placed on the riprap in the Zone of Riparian Plantings during initial construction; this will help prevent excessive sedimentation when water is first diverted through the new channel. The voids between the riprap in the zone of riparian plantings should silt in over time. A quick growing cover crop consisting of oats or barley will be planted on the topsoil and other disturbed areas to provide a fast growing vegetation cover to stabilize the soils as soon as possible. The permanent seed mixes will be planted during the 1996 fall planting season. Seedlings, willow clumps, cottonwood poles, and cottonwood seedlings will be planted immediately upon completion of earthwork as discussed previously. If seedlings are not available this spring they will be planted during the spring of 1997 or during the first available season.

Monitoring of vegetation success will be conducted as required by the UDOGM regulations. Areas that do not meet the UDOGM standards will be augmented as required.

All areas of disturbed soils outside of the flood plain will be reclaimed by roughening up the surface to create a seedbed. Normally, this is accomplished by contour ripping with a large dozer, or pitting with the bucket of a track mounted hoe to create furrows and/or pits at least 10 to 12 inches deep. The equipment used will depend on the slope of the ground; normally a dozer can negotiate a slope of 3 feet horizontal to 1 foot vertical (3:1), and a track mounted backhoe can handle the rest.

Mulch will be used in all seeded areas to provide protection for the seedbed and aid in germination. Mulch will consist of weed free straw or wood fiber mulch. Straw will be used at a rate of 2.5 tons per acre. Wood fiber mulch will be used at the manufacturers recommended rate.

- Item 5. A round culvert is acceptable with the following installation requirements:
- A. Baffles as shown on Exhibit A will be constructed inside the culvert. The baffles will provide a constant water depth inside the culvert to allow fish to migrate through the culvert. The baffles will be placed on a 10 foot spacing and the slots will be constructed on the side and will be alternated from one side to the other on successive baffles;
 - B. A pool will be provided at the downstream end of the culvert at

least 2 feet deep to allow fish to jump into the end of the culvert. The riprap at the lower end of the pool will be cemented to form a crest that will force the water to rise to the level of the end baffle crest in the pipe. This will provide a constant pool of water that extends back into the culvert. The concrete will be placed to be as inconspicuous as possible.

C. No fill material will be placed inside the culvert.

The culvert slope was originally designed to limit the flow velocity during normal flow conditions to no more than 3.5 feet per second to allow fish to migrate through the culvert. With the addition of baffles, the flow velocity will be less than 3.5 feet per second due to the partial blockage or pooling effect created by the baffles.

Two skylights have been incorporated into the culvert design as shown in the plans included in the permit application document.

- Item 6. The channel design with the modifications discussed in this letter are adequate.
- Item 7. Mitigation alternatives were discussed including enhancement vegetation planting in the riparian zone upstream and downstream from the project site, and elimination of stream barriers to fish migration. Other possible off site mitigation alternatives were discussed with no firm alternative chosen. It was decided that vegetation plantings upstream and downstream from the project site would not accomplish anything since vegetation seems to be doing very well. Mitigation will be determined by the parties involved; Cyprus commits to mitigation that is reasonable and achievable.
- Item 8. The following monitoring will be conducted by Cyprus and the UDOGM:
- A. Cyprus will monitor vegetation success according to the UDOGM regulations and guidelines.
 - B. Channel structure evaluations will be made on a regular basis. Since Cyprus personnel will be present at the site from now on for the life of the mine, monitoring of the channel will be done on a regular basis. If structural problems are identified, corrective actions will be taken in conjunction with the Corps, DWR, and the UDOGM.

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- C. Monitoring by UDOGM will likely be conducted on a regular basis since UDOGM is required by its operating charter with the U.S. Office of Surface Mining Reclamation and Enforcement to conduct monthly inspections of the mine site.
- D. Cyprus will conduct fish surveys and macroinvertebrate surveys in the relocated channel and reference areas during the first year after construction and again five years after construction. The surveys will be conducted using the same methodology used during the pre-permitting surveys in 1994 and 1995.
- E. Evaluation of the effectiveness of the structure design will be conducted on a regular basis with emphasis during the fall of 1996. If the riprap and gravel base is not silting in as expected, a joint resolution will be reached on actions to take to remedy the problem.

Construction during high flow -

Construction during high flow will be allowed with the foregoing design considerations. Flow will be diverted through the new channel carefully to avoid problems. Cyprus will monitor the stream flow and coordinate construction with the Corps and the DWR.

Rock check dams will be constructed in the new channel for temporary sediment control after the peak flow is past, at the west end of the lower channel. A series of 4 check dams will be constructed with a height of 18" at a spacing of 20'. The dams will be removed at the end of the first season during low flow.

This letter serves as response to the DWR concerns and as a revision to the original application. The drawings in the original application will be revised as appropriate to reflect the revisions included in this letter.

Please contact me if there are any other issues we need to address.

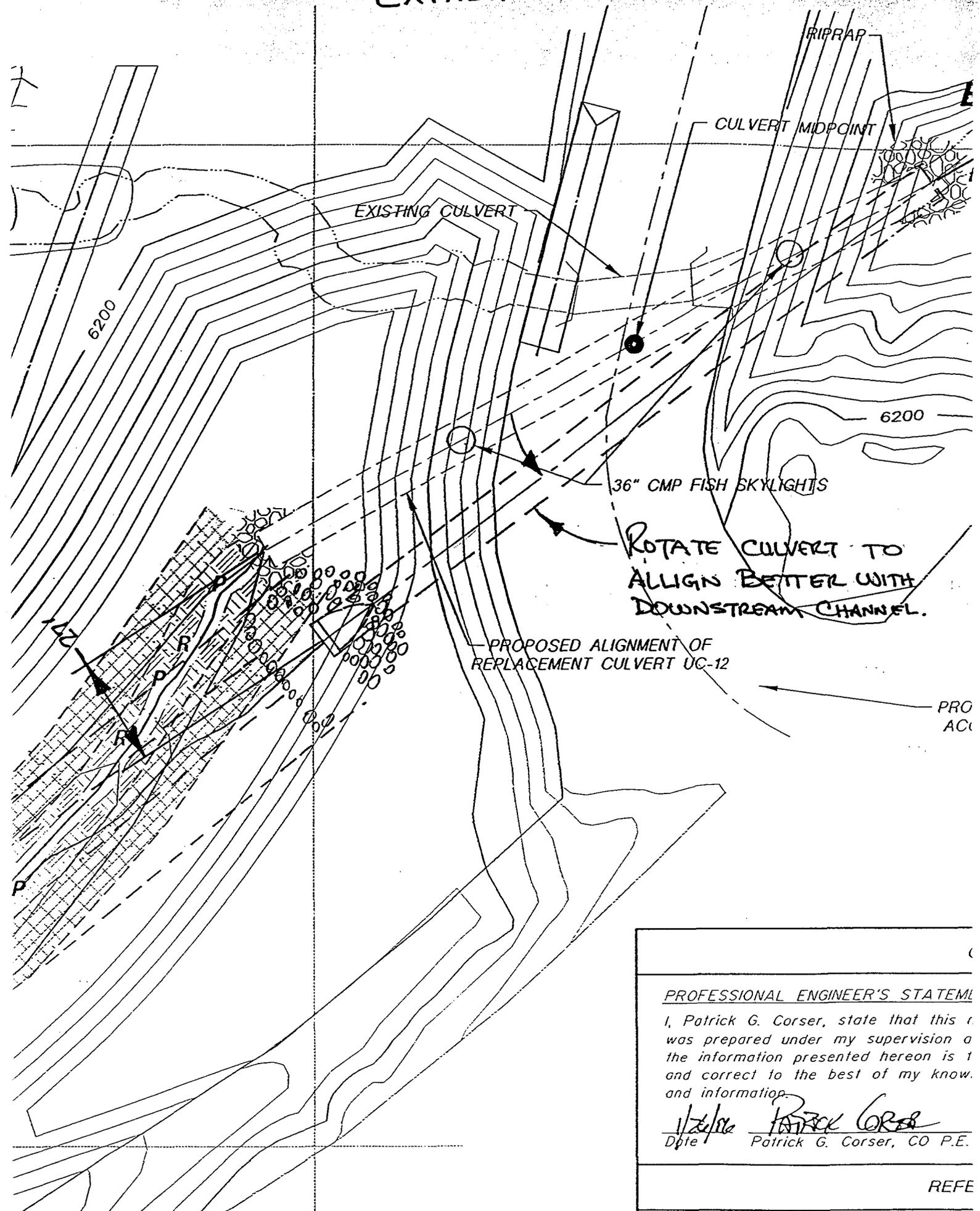
Respectfully,



Ben Grimes
Sr. Staff Project Engineer

CC: Bill Bates Bill Bradwisch Steve Johnson
File: WCENV 1.3.1
Chron: BG960308

EXHIBIT A



PROFESSIONAL ENGINEER'S STATEMENT

I, Patrick G. Corser, state that this drawing was prepared under my supervision and the information presented hereon is true and correct to the best of my knowledge and information.

1/24/06 Patrick Corser
Date Patrick G. Corser, CO P.E.

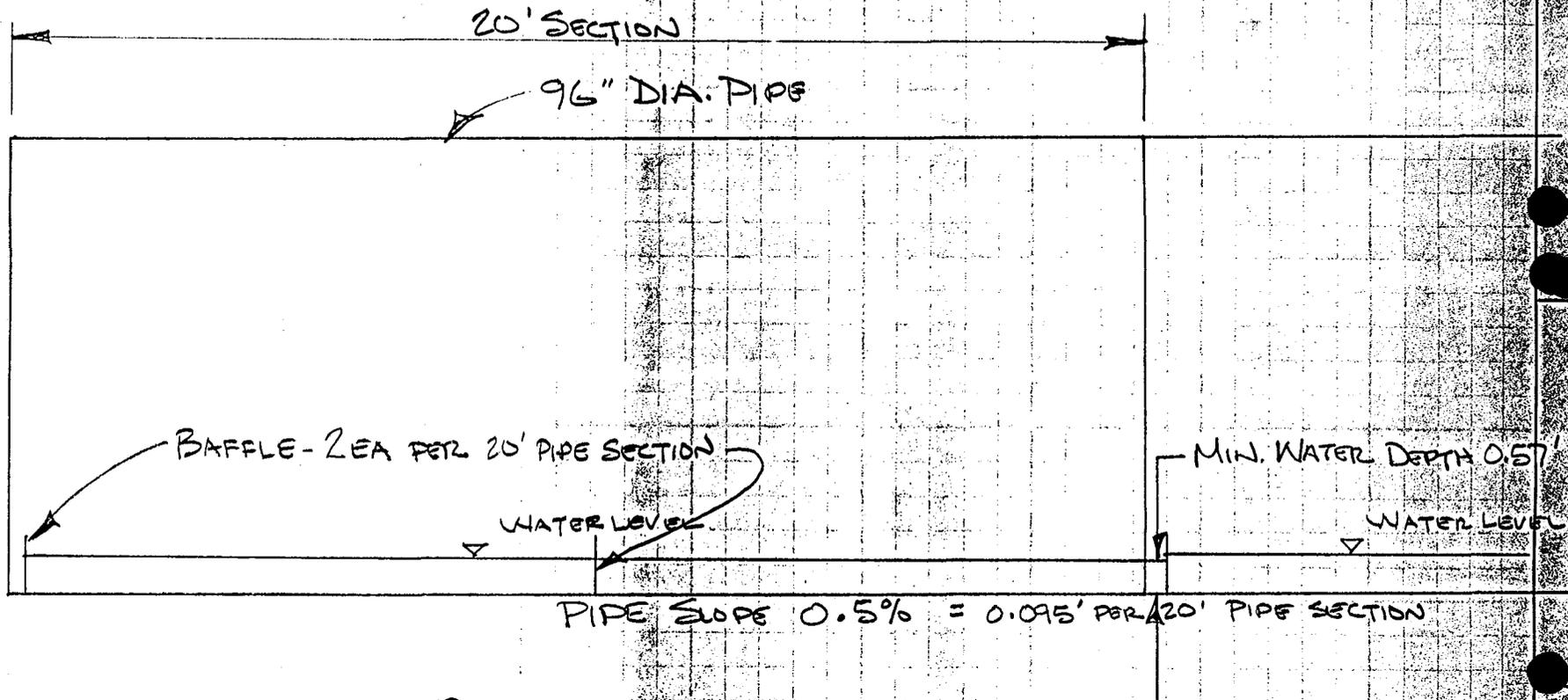
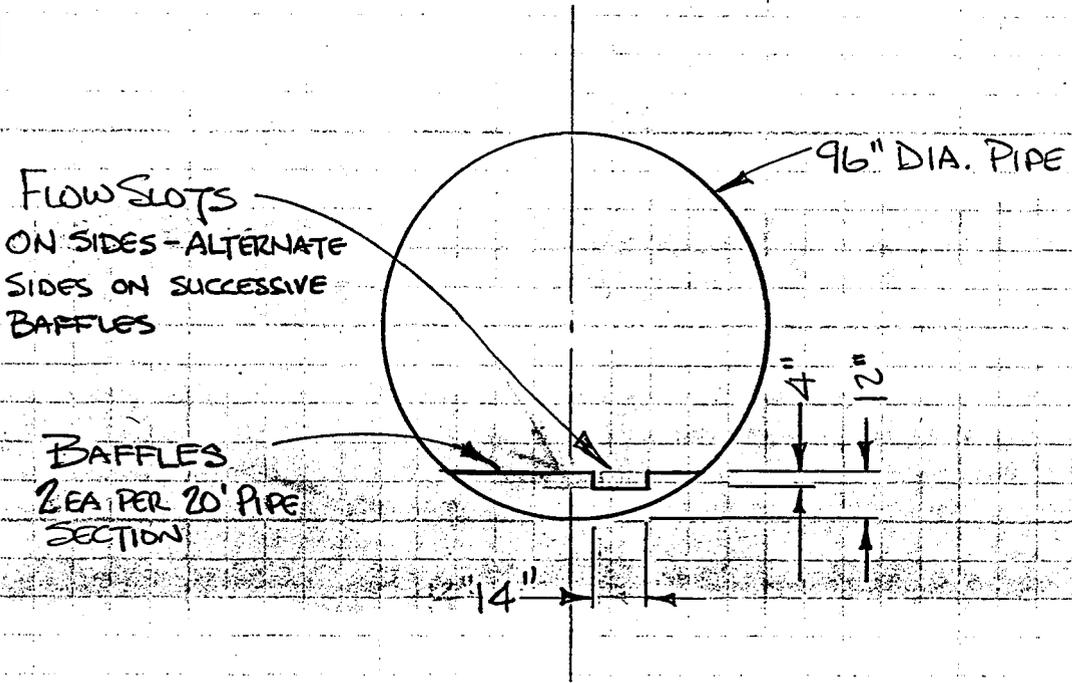


EXHIBIT B
WILLOW CREEK CULVERT CROSS SECTION
SCALE 1" = 3'

WILLOW CREEK
Eg

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS



FLOW SLOTS
ON SIDES - ALTERNATE
SIDES ON SUCCESSIVE
BAFFLES

BAFFLES
2 EA PER 20' PIPE
SECTION

EXHIBIT C

WILLOW CREEK CULVERT BAFFLE DETAIL

SCALE 1" = 4'

EXHIBIT D

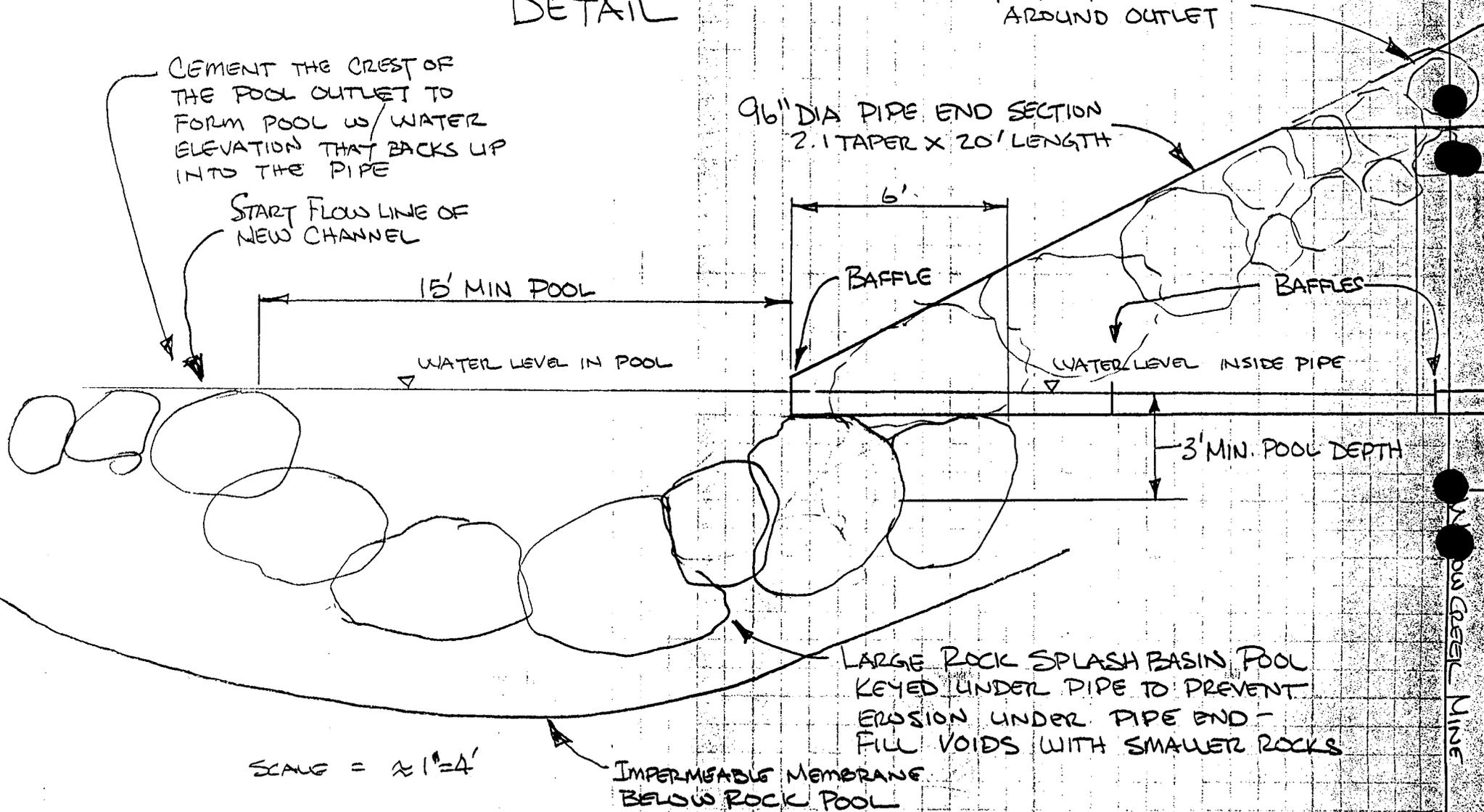
WILLOW CREEK CULVERT OUTLET END DETAIL

RIPRAPPED BASIN
 AROUND OUTLET

CEMENT THE CREST OF
 THE POOL OUTLET TO
 FORM POOL w/ WATER
 ELEVATION THAT BACKS UP
 INTO THE PIPE

START FLOW LINE OF
 NEW CHANNEL

96" DIA PIPE END SECTION
 2:1 TAPER X 20' LENGTH



WILLOW CREEK LINE
 RA