TRI-CORE ENGINEERING

TRANSPORTATION
FLOOD CONTROL
WATER / WASTEWATER
LAND DEVELOPMENT
PLANNING
GIS SERVICES
CONSTRUCTION ADMINISTRATION

MEMORANDUM

DATE: September 16th, 2005

TO: CIP Advisory Committee Members, TischlerBise

FROM: Vince Gibbons
Stephen Ganstrom

PROJECT: Pahrump CIP & Impact Fee Study - 5112.0005

RE: Drainage and Flood Control Update – Northern C.I.P

Summary

The updates to the enclosed Drainage & Flood Control CIP have incorporated the Northern Service Area per Nye County BOCC and advisory committee's comments. This D&FC CIP has been reviewed by County Staff and approved with changes reflected by this draft.

Summary of Revisions:

1. Planning and Service Boundary Modified (*Figure 1*)
2. Northern Projects Identified (*Summary Of Project And Table 9*).
3. Northern Projects Prioritized and Compared to Southern Projects. (*Schedule And Cost Table*)
4. Projects within the 10-Yr CIP List Updated and Reorganized to Accommodate Northern Service Area.
5. Mapping Information Added to Project Index Maps to aid Topographic Understanding (*Figures 2 and 3*)

Implementation

This is the final piece of the CIP project. To move forward with the implementation of this fee category, the CIP advisory committee will need to review and make their recommendation to the BOCC. If drainage and flood control is to be pursued in earnestly by the community, the BOCC will need to identify initial and ongoing funding sources for the projected fiscal responsibilities outlined in this report. While this might seem like a monumental task, the ultimate health, risk of injury, and damage to the community warrants this effort.

Based on the assumption that the projected CIP costs and impact fees outlined in both TCE's and TischerBise's reports are directly proportional between the northern and southern services areas, impact fees for the north can be approximated from the south. Table 1 below outlines the proportionality between the general land uses and extrapolates the proportional impact fees for the new collection and expenditure districts.

Table 1

	Impact Fee (South Only)		South	North
CIP Cost (Million $)	$51.52		$44.66	$9.47
Landuse		**Factor**	.87	.18
Single Family Detached	$4,246*		$3,681	$780
Multi-Family	$1,673*		$1,450	$308
Non-Residential	$1.18*		$1.02	$0.22

*Previously reported in Tischlerbise Impact Fee Report.

These numbers are approximations due to the fact the projected growth for each zone will differ slightly from north to south.

The publication of this report and summary above constitute the balance of the work provided for this project. Until otherwise directed, TCE and our impact fee team (TischlerBise and White and Smith) will pursue no further actions.

Attached:

Drainage and Flood Control CIP (Rev. Aug. 17th, 2005)

DRAINAGE & FLOOD CONTROL
CAPITAL IMPROVEMENT PLAN
FY 2006 - 2015

PAHRUMP REGIONAL PLANNING DISTRICT

NYE COUNTY, NEVADA

PREPARED FOR:

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Nye County Planning

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Draft Revised

August 17th, 2005

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INTRODUCTION

The fan-shaped, gently sloping, landforms located on the east side of the Pahrump Valley are commonly referred to as "alluvial fans". There are 18 mountain watersheds that empty into the Pahrump Valley via these alluvial fan areas. Floods in these areas can occur with little advance warning time, exhibiting unpredictable flow paths and high flow velocities with devastating effects. These floods can cause considerable erosion in some areas while depositing large amounts of sediment and debris in others. These alluvial fan areas provide attractive development sites due to their commanding views and good local drainage, yet harbor some severe flood hazards due to flows from the mountain watersheds located upgradient. The following report outlines the Capital Improvement Plan to assist existing and new development with drainage and flood control.

C.I.P. Summary

The mission of a regional drainage and flood control Capital Improvement Plan (CIP) is to provide flood hazard identification, regulation, remediation, and education to Nye County Residents to reduce risks of injury, death, and property damage from flooding while still enjoying the natural and beneficial values serviced by floodplains. The CIP presented in the following write-up is a 10 year plan that identifies priority infrastructure needs and annual funding requirements for capital projects with a tentative outline of future projects for an additional 10-yr period identified. Capital infrastructure required for drainage and flood control includes hydraulic structures and related facilities designed to detain, divert, and convey stormwater flows in a manner so as to reduce risk of injury to life and damage to property during storm events. This plan addresses both the improvement of existing structures as well as the construction of new facilities designed to protect homes and businesses in the Pahrump Valley now and in the future. This CIP enables the County to identify needed capital projects, coordinate financing and establish construction timing. To increase effectiveness, the CIP consists of two crucial segments; an administrative process to

identify and prioritize future capital projects (the Prioritization Procedure) and the fiscal plan to identify annual funding requirements for those projects. For each CIP project the costs for planning, design, construction, and in some cases rights-of-way acquisition are included in the estimates of funding requirements.

The CIP links the planning and budget activities of the county. It can support not only past policy decisions by establishing priorities between competing projects, but can also measure and evaluate the merits of new proposals. Typically, a CIP describes each capital project proposed for development over the forthcoming ten years period by listing the year that it is to be started and the cost per year

Even though the overall process is dynamic and periodically adjusted to fit revised forecasts of growth and fiscal expenditures, the CIP approach to planning insures that priority needs are addressed in a timely manner. This approach is appropriate for areas that are experiencing rapid growth, as is the case in Nye County.

It ensures that new facilities will be evaluated within the context of county and municipal land use plans and weighted against safety and maintenance requirements for existing structures.

Among its many advantages, an effective capital improvement program:

- Focuses attention on goals, needs, and objectives. It ensures that the County's capital projects are consistent with changing community objectives, anticipated growth, and financial capabilities.

- Requires the scheduling of major investments and reduces the possibilities of costly mistakes. It provides specific project information that assists county staff and the Board of County Commissioners.

- Facilitates more efficient administration and management. Focused review of necessary capital improvements can reduce scheduling problems, conflicting and overlapping projects, and overemphasis on any single function or geographical area.

- Promotes cooperation with other jurisdictions. The capital planning process gives all jurisdictions the opportunity to coordinate location, timing, and financing of related projects.

- Allows leveraging of County funds with other funding sources.

- Maintains a sound and stable financial program. Dramatic changes in the county's tax structure can be avoided when capital projects are planned and implemented over several years.

Detailed information on flooding and flood-prone areas is typically generated in stages through refining Area Drainage Master Plan (ADMP) studies for specific watersheds. ADMP studies provide the hydrologic and engineered studies in selected areas for uniform, comprehensive inventories and models of the features influencing rainfall-runoff. These ADMP studies recommend specific, project-orientated or avoidance solutions for flooding problems over a specific watershed drainage area.

Service and Planning Areas

The Pahrump Regional Planning District has been divided into two planning areas for this CIP as shown in Figure 1 at the back of this Report. The Northern area extends approximately from State Highway 372 to the northern boundary of the district. The southern service area extends from the State Highway 372 south to the borders of the state line and county line which constitutes the balance of planning district area. This southern planning area has been identified as the logical beginning for this capital improvement program, since the potential flooding, population projections, and land use assumptions

create a greater need for public safety in the south. The Northern area has also been included and analyzed.

This Report mainly identifies projects which are located in the southern planning area, but has included two projects from the northern planning which are highly ranked by the priority procedure. Therefore, the planning area boundaries also function as the service area in which impact fees will be collected and expended. Within the southern area are 9 individual watershed areas, covering a total of 334.62 sq miles. The northern service area projects identified also function within that service area to which impact fees will be collected and expended. Within the northern area are 11 individual watershed areas, covering a total of 218.15 sq miles.

This report recommends the service area in which impact fees will be collected and expended remain as simplistic as presented in this report. Not only will the attempting to further subdivide the planning and service area severely complicate and hamper the administration of capital projects, but the natural flatness of the Pahrump valley floor and existing roadways complicate these subdivisions. Pahrump valley floor is flat enough to predominantly experience sheet flow. The addition of capital drainage improvements will have unexpected benefits which could possibly reach across any further subdivisions. Additionally, existing roadways have altered the numerous flow patters making further subdivisions dependent on no future development, which is not the case. The Pahrump Valley is and will continue to construct roadways which will alter the subdivisions.

To date comprehensive Area Drainage Master Plan (ADMP) studies for individual watersheds have not been conducted in the Pahrump Valley. Therefore capital improvements identified in this CIP have been developed with limited available data. Nevertheless, each proposed drainage improvement reasonably addresses known flooding issues. ADMP studies and comprehensive field assessments for watersheds located in the southern service area to firm up both the design requirements and anticipated costs for the proposed CIP projects presented in this report will be performed in the future. ADMP studies for the southern area is included as a CIP project to be completed in stages over a five year period.

The balance of the Pahrump Valley can then be studied with staged ADMPs as CIP projects are completed.

Existing Capital Improvements

In general the Pahrump valley is devoid of existing flood and drainage capital improvement facilities. There are also no existing ordinances to insure that as the area develops such facilities. Since historic flooding problems affecting the populated areas have been widespread shallow flows with isolated major damage and deposition of sediment, some responsible developers have elevated building pads 1 to 2 feet to provide the residents with a basic level of protection. This type of flood control provides little to no protection for major storm events, and further compounds flooding problems as the valley continues to develop. Furthermore the vast majority of existing small seasonal creeks traversing the valley have not been preserved. Therefore these small creeks which could have conveyed storm flows ranging from 25 to 50 cubic feet per second are now blocked and can not be upgraded, improved, or expanded. The bases of the total existing capacity, level of current usage, future need of capacity caused by new development and the number of projected service units required by the new development is outlined in the Nye County Impact Fee Study conducted by TischlerBise.

Two existing areas which can be improved and upgraded are the Commstock Channel and Lake View Golf Course. The existing capacities of these connecting channels are unknown at this time, but have been identified as possible major projects. The use of these existing features does not affect the Impact Fee Study calculations conducted by TischlerBise.

SECTION 1: Project Identification and Prioritization Procedure

Major projects were selectively identified based on magnitude of expected flooding and potential benefits of provided protection to existing property. Once the major projects were identified, the prioritization procedure employed utilized generally accepted criteria to rank

each project. Both the project identification and prioritization procedure are explained in further detail below.

Project Identification

In lieu of an ADMP Study and or other Master Planned Project evaluations, each of the projects identified by the CIP are an inclusive attempt to address historically known flooding issues and commonly known problems within the southern service area. Historic flooding issues are primarily associated with Wheeler Wash and to a lesser extent other high mountain watersheds which generate considerable storm water runoff. Flooding problems in Pahrump are aggravated by inconsistent distribution of flow across the valley's predominate upstream alluvial fans and lack of defined drainage courses through downstream developed areas. Some of the commonly known areas with flooding problems are Wheeler Wash, Winery Road, blocked drainage paths through out the Calvada area, northern Leslie street area, and identified FEMA flood zone areas located throughout the valley.

Prioritization Procedure

This CIP has identified and prioritized the regional flood control and drainage facilities to be constructed over a 10-yr planning horizon with future projects also identified for the following 15-yr period. Since, a formal prioritization procedure has not yet been adopted by Nye County, the County and Tri-Core staff has determined the priority ranking of individual projects using the following criteria as a guide. The prioritization process allows comparisons to be made between competing projects to insure that CIP expenditures area allocated toward the greatest need.

- **Hydrologic / Hydraulic Significance** – The physical location, peak discharges and frequency of flooding events, depth and velocity of flow, watershed size, existence or absences of flood control structures, etc… Future impact of the project on FEMA floodplain and reducing risk of damage due to flooding.

- **Level of Protection** – Level of protection relates to return frequency (2-yr to 100-yr) of the flood event to be addressed by the design of the proposed flood control facilities. While generally a proposed design to control flooding for a 100-yr event would rank higher then one designed for the 10-yr event, the factors associated with frequent repair of damages, ponding, and nuisance created in certain areas due to smaller storm events are taken into account.

- **Magnitude of Protection** – The magnitude of benefits provided by the completion of the project as it pertains to size and value of infrastructure protected. Information pertaining to the estimated number and value of occupied structures protected within the projected flood plains, number of public buildings (schools, hospitals, churches, libraries etc.) to be protected, amount of infrastructure (roads, utilities, etc.) to be protected, acreage of developed, agricultural, and undeveloped land affected, population directly or indirectly benefited by the project, age of development and length of time the flooding problem has existed.

- **Coordination with Other CIP Projects –** The opportunities to coordinate the construction schedule for drainage and flood control facilities with other CIP projects including roads, sanitary sewers or other utilities projects within the vicinity influences the ranking of a proposed project. Where feasible, the ability to combine a project with major improvements to be constructed by private developers is also considered in the ranking process.

- **Rights-of-Way Acquisition** - The rights-of-way requirements and the anticipated time frame to complete land acquisition will in some cases be a major factor in the prioritization of projects.

- **Land Use Planning** – The relationship of the project with the regional land use plan and areas or anticipated growth. New development proposed with high in density residential or commercial development land use areas raises the priority for flood protection.

- **Environmental Quality** – The immediate or potential benefit to sensitive areas such as riparian vegetation, receiving waters quality, wildlife habitat, and related environmentally sensitive areas.
- **Ancillary Benefits** – The ancillary benefits created by a project like multi-use /opportunities, and high potential for grant funding and/or multi-agency funding.
- **Costs Versus Benefits** – The estimated costs for design, land acquisition, and construction of the proposed project as compared to the magnitude of benefits derived.
- **Annual Funding Projections** – Timing of funds available annually was also considered as a factor in prioritizing projects by year.

Other Considerations

It is important to understand that flood control projects not only can protect life and property from existing flooding threats, but also provide additional benefits. These benefits can include increased protection for natural habitat, new public use facilities and parks, and opportunities for aesthetically revitalized designs that would contribute to Pahrump's distinct character. Also since the Pahrump Planning Area is located in a predominantly desert environment, the drainage patterns and physical characteristics consist of alluvial fans and dry creeks. The typical remediation of such drainage patterns consist of dams, retention basins, channels and underground storm drain. These improvements will impact adjacent anticipated roadways and residential areas. The design features intended to minimize the negative impacts of area facilities are not addressed in detail by this CIP process. Negative impacts like utility relocation which are kept to a minimum to keep costs down will be addressed in the ADMP studies and project implementation process.

SECTION 2: Fiscal Planning

Government sector organizations which plan and construct large capital drainage and flood control projects over extended periods of time finance them by creating improvement

districts which plan and manage taxes and fee revenues. The fiscal planning presented here does not account for the ever changing fluctuations in revenues, which the County may experience over the planned timeframe of a 10-yr Capital Improvement plan. The actual revenue expenditures for such projects will be entirely dictated by Nye County's long-term capital budgeting. Information outlining demands, costs, input variables, and the ultimate impact fee calculations to support large capital budgeting are explained in full by the Nye County Impact Fee Study conducted by TischlerBise.

Also it is important to keep in mind that both funding requirements and scheduling of CIP projects may change due to agreements reached with developers. The specific needs of a new development may result in accelerating the schedule and providing advanced funding for a specific CIP project in order to meet anticipated development needs. The Total CIP Fiscal Projection Summary table and graph included in the appendix of this Report depicts the fiscal planning needed to design and construct each capital project identified within the 10-yr horizon with a rough idea of project and costs for another 15-yrs into the future. The appendix is organized into three areas. The first area lists each project organized by valley area and reports the physical lengths and costs for each project. The second area lists each project by priority ranking and fiscal year in which it is planned. The last area lists the unit costs for each type of typical project.

Since County fiscal planning does not currently provide for a large capital improvements program, the timing of proposed CIP projects has been adjusted to keep costs lower in the early years with the expectation that growth in collection of fees and taxes over time will allow for larger annual CIP expenditures. This ramping of costs should not be followed if it in anyway impairs the counties ability to construct the proposed facilities or spend collected fees with in the statute laminations. Inflation and other unforeseen economic factors may affect the costs of future projects. However, to reduce the complexity of the fiscal planning at this time all project costs are presented in today's dollars without regard for future inflation.

Opinions of probable costs for roadway relocations, dams, retention basins, channels and underground storm drains included in the appendix of this Report represent the cost for each proposed improvement. They are used in conjunction or singly to provided hydraulic capacity anticipated at each geographical area.

SECTION 3: Project Descriptions

The general geographical location described for each project in the following write-up can be found on the Project Index Maps appendix of this report. For future planning purposes all projects identified within the southern and northern service areas are listed in the table appendix through the 10-yr planning horizon with an additional 15-yr period into the future. In order to accommodate all the planned projects an additional 5 years were added compared to the Streets and Drainage CIP which only identified and additional 10-yrs.

The Southern area has been broken into four sub-areas for this report to better define the geographical location for each project. The sub-areas starting from the furthest North are; Central, Carpenter, Trout and Trout South as shown on Project Index Map. The Central sub-area mitigates the flooding potential from Wheeler Wash, Lovers Wash, central populated portion south of State Highway 372 and Pahrump's commercial center. The Carpenter sub-area mitigates flooding potential from Carpenter Canyon and the southern portion of residential areas. The Trout sub-area mitigates some of the Trout Canyon flow and the residential areas south of 2 Hands Road. The Trout South sub-area mitigates the remaining portion of Trout Canyon flow that impact the Front Sight and surrounding developments. Because of the absence of substantial development in the southern flood control Trout area, flood control CIP, projects have not been identified for that area at this time.

The Northern area has been broken into four sub-areas for the same reason listed above. The sub-areas starting from the furthest North are; Johnny, North, Central and South as shown on Project Index Map.

Typical cross sections for the proposed drainage improvements as described for each CIP project are provided in the appendix of this Report. Drainage improvement cross sections include minor and major channels, minor and major underground conveyance, possible project combination of road reconstruction and channels, and major valley channel. The improvements shown in these typical cross sections are reflected in the unit costs in the appendix of this Report.

Any project which falls outside the 10-yr CIP horizon that could be conceivably constructed within the 11th through 25th years have been identified, evaluated for probable costs and mapped for reference only. These future projects are listed for reference proposes in the table, but are not included in the following detailed project descriptions. The following 10-yr CIP projects are arranged by their corresponding prioritized ranking, from highest to lowest priority.

Area Drainage Master Plans

- (FY 2006, 1.0 Million) Preparation of Area Drainage Master Plans (ADMP) for groupings of mountain watershed areas will quantify the extent of flooding problems and identify a plan to control stormwater runoff and prevent flood damage to existing and future development within the study area. These studies will include detailed hydrologic and hydraulic analyses to evaluate alternatives for regional flood control facilities. For each identified problem area a preferred alternative will be recommended with conceptual design drawings for proposed facilities and the estimated costs provided. Requirements for rights-of-way acquisition, roadway reconstruction, and utilities relocations will be identified for planning and coordination with other CIP projects. In addition, guidelines and criteria dealing with the stormwater aspects of new development will be developed and used as the basis of design for stormwater facilities constructed by the County and developers.

Wheeler Wash Levee (COE)

- (FY 2008, 11.9 Million) A 2.0 mile long retention dam (Levee) design to retain a portion of the 97.2 square mile Wheeler Wash watershed runoff which exceeds 18,900 cfs during the 100yr event. The total costs for this project are still under consideration by the United States Corps of Engineers (COE), but the cost shared by Nye County is expected to be 35% of the $34.0 Million total, approximately $11.9 Million. This project will spectacularly reduce the amount of flood damage experienced by the homes and businesses located in the heart of the Pahrump Valley. Because of this relatively high cost and high degree of federal coordination required for this project, it has been delayed by a year from this original recommended priority rank of number one. The release of the COE's Wheeler Wash, Nevada Detailed Project Report dated March 2005, outlines the issues which will need to be addressed to make this project feasible to start in 2007. Nevertheless, this project is of key importance to all subsequent downstream projects designed in this CIP.

Winery Road Channel and Basin

- (FY 2007, 2.07 Million) Previously studied by the "Winery Road Storm Water Management Report", completed for Nye County in 2004, the report identified channel and basin improvements along the eastern Bureau of Land Management (BLM) boundary of development in the Winery Road area, which these facilities will divert and detain flows originating below the Wheeler Wash Levee. These improvements can be installed prior to the Wheeler Wash Levee construction if necessary and still provide an intermediate level of protection for homes and businesses located downstream. However, it is recognized that until the Wheeler Wash Levee (COE) is constructed these facilities will be subject to possible damage and costly repairs from storm events with a return frequency of greater than 10 years.

Winchester Av. Road and Channel

- (FY 2008, 3.25 Million) Extending the final 1.25 mile leg of the existing natural Lakeview Channel running from Gamebird Rd. to the intersection of Redrock road and Huracon Street and providing an outlet structure to the existing wash located on BLM land. The combination of a new channel and improved roadway drainage capacity will provide a continuous drainage path through existing residential development.

Lower Redrock Road and Channel

- (FY 2009, 1.83 Million) The intermediate 0.7 mile leg of the existing natural Lakeview Channel which runs north from the intersection of Redrock Road and Huracon Street to Calvada Boulevard. This will connect to the Winchester Avenue Channel to the Upper Redrock Channel and Calvada Road and Channel improvements. This project provides a new channel and revised roadway drainage capacity needed for a continuous drainage path through existing residential development.

Upper Redrock Channel

- (FY 2009, 1.20 Million) The upper 0.7 mile leg connecting the existing natural Lakeview Channel to the lower portions of Redrock Road Project. This project would run between Redrock Road and River Plate Rd. north from Calvada Boulevard to Florida St. The new channel provides capacity which would provide for a continuous drainage path through existing development.

Lower Warren St. Valley Channel

- (FY 2009, 5.83 Million) The first 1.77 miles of a new major valley channel requiring full ROW acquisition. This new channel project will establish the northern valley ultimate outfall and presents a valuable opportunity to provide a possible multi-use

drainage facility since the overall shallow slope will require a large flow area. It is important to provide a continuous drainage path through existing residential developments and provide an outfall structure to existing washes located on BLM land.

Manse Road Channel

- (FY 2009, 5.29 Million) The lower 3.0 miles of new channel and increased roadway drainage capacity needed to provide for a continuous drainage path through existing residential developments and provide an outfall structure to existing washes located on BLM land.

Pahrump Valley Road Underground Storm drain

- (FY 2011, 2.52 Million) The lower 1.1 miles of new major underground storm drain and increased roadway drainage capacity needed to provide for a continuous drainage path through existing residential developments and provide an outfall to existing washes located on BLM land.

Carpenter Canyon Basin

- (FY 2012, 0.17 Million) A detention basin located one due east of the intersection of Kellogg Rd. and Hafen Ranch Rd. needed to reduce the peak flows from the second largest (45 sq mi) single watershed's stormwater runoff entering the Pahrump Valley.

Kellogg Road and Channel

- (FY 2012, 1.29 Million) The lower 0.5 miles of new channel and increased roadway drainage capacity running from Vicky Ann Road due east to Oakridge Avenue needed to provide for a continuous drainage path through existing residential developments and provide an outfall structure to existing washes located on BLM land.

Oakridge Ave. Channel

- (FY 2012, 2.65 Million) The intermediate 1.0 mile leg design to convey substantial stormwater flows along Thousandaire Boulevard. This channel runs due north from Kellogg Road to the intersection of Oakridge Avenue and Thousandaire Boulevard. It will provide a new channel and the increased roadway drainage capacity needed for a continuous drainage path through existing and proposed residential developments.

Homestead Channel

- (FY 2013, 4.80 Million) The upper 2.7 mile leg of channel and increased roadway drainage capacity needed to provide for a continuous drainage path running north along Homestead Road from the intersection with Manse Road to HWY 160 through existing development. This project will remediate existing drainage problems stemming from residential and commercial development and large flows emanating from Wheeler Wash alluvial fan.

Thouseandaire Blvd. Channel

- (FY 2014, 5.93 Million) The upper 3.3 miles of new channel and increased roadway storm drain drainage capacity running from Oakridge Avenue due east to the intersection of Thousandaire Boulevard and Hafen Ranch Road. This project will provide for a continuous drainage path through existing and proposed development.

Fairgrounds Basin and Collection System

- (FY 2015, 1.52 Million) The detention basin located at the east end of the proposed Fairgrounds in the “dry camping” section of the proposed layout needed to remediate an area of relatively low elevation from stormwater flows from three dominant watersheds. The project includes the basin, major crossing under HWY 160 and finally the collection system need to channel flows to the highway crossing.

Upper Warren St. Valley Channel

- (FY 2015, 3.14 Million) 1.07 miles of a new major valley channel requiring partial ROW acquisition. This new channel project can incorporate the existing roadway and extend the northern valley and presents another valuable opportunity to provide a possible multi-use drainage facility since the overall shallow slope will require a large flow area. It is important to continue to provide this drainage path through existing residential developments and provide an outfall structure which ultimately exists to washes located on BLM land. This project will also proved a major connection for future smaller projects elevating FEMA flood Zone designated with "Ao" with shallow up to 2 ft deep.

Summary of Projects

Each of the 16 projects discussed above are recommended to be constructed over the next 10 years with a total cost of 54.12 million dollars. The additional 38 projects identified for an additional 15 years with a total cost of 96.47 million dollars are recommended to be studied in further detail after the CIP projects are constructed.

Based on the details of each project, the County can develop and better understand the annual fiscal needs required to build capital projects. The CIP project described above will link the planning and budgeting activities of the County. The CIP can support past policies, establish new priority projects, and create the mechanism to make comparisons between competing projects.

Table and Graph APPENDIX

Summary of Projects - Northern

PROJECT PRIORITY	DESCRIPTION	QUANTITY	UNIT	$ UNIT COST (1)	Millions of $ TOTAL COST
	BLM				
	Bell Vista A. Deten. (Reg. Basin)	16,327	SY	$18.80	$0.31
	Last Chance Basin (Reg. Basin)	16,865	SY	$18.80	$0.32
				Subtotal=	$0.62
	North North				
	Murphy St. (Valley Cannel)	8,381	FT	$623.00	$5.22
	Joanita St. Basin (Reg. Basin and ROW)	8,472	SY	$29.13	$0.25
	Woodchips Rd. (Mjr. Channel and ROW)	7,304	FT	$417.90	$3.05
	Leslie St. (Mjr. Channel and ROW) and (Mnr. Rd. and Mjr. Channel)	11,631	FT	$491.20	$5.71
	Last Chance (Mjr. Channel)	8,828	FT	$337.90	$2.98
	Bell Vista Av. (Mjr. Channel)	3,992	FT	$337.90	$1.35
	Simkin Rd. (Mjr. Underground)	16,439	FT	$444.20	$7.30
	Calvada North (Mjr. Channel)	10,433	FT	$337.90	$3.53
	Wood Canyon (Mjr. Channel)	8,438	FT	$337.90	$2.85
	Wood Canyon Basin (Reg. Basin)	16,865	SY	$29.13	$0.49
	Sub-Total (miles) =	14.3	MI	Sub-Total=	$32.74
	North Central				
16	Upper Warren St. (Valley Channel with Ex. ROW)	5,664	FT	$554.17	$3.14
	Six Mile Spring (Valley Cannel)	9,134	FT	$623.00	$5.69
	Bonnavitch St. (Valley Cannel)	6,534	FT	$623.00	$4.07
	Bass Basin (Reg. Basin and ROW)	28,503	SY	$29.13	$0.83
	Charleston Park Rd. (Mjr. Underground)	20,792	FT	$444.20	$9.24
	Irene St. (Mjr. Underground)	25,356	FT	$444.20	$11.26
	Sub-Total (miles) =	12.8	MI	Sub-Total=	$34.23
	North South				
7	Lower Warren St. (Valley Cannel)	9,353	FT	$623.00	$5.83
	Sub-Total (miles) =	1.8	MI	Sub-Total=	$5.83
	North Grand Total (miles) =	28.8	MI	North Total=	$73.42

TABLE ABBREVIATIONS:

(COE)	US Army Corp of Engineers
(Min. Rd.)	Roadway Relocation - Collector (Table 2)
(Mnr. Channel)	Minor Channel (Table 3)
(Mjr. Channel)	Major Channel (Table 4)
(Loc. Basin)	Local Storm water Detention Basin (Table 5)
(Reg. Basin)	Regional Storm water Detention Basin (Table 6)
(Mnr. Underground)	Minor Underground Storm drain (Table 7)
(Mjr. Underground)	Major Underground Storm drain (Table 8)
(Valley Cannel)	Valley Channel (Table 9)

Possible Facilities Combinations & Variations (Table 1)

(Mnr. Rd. and Mnr. Channel)	Roadway Relocation + Minor Channel
(Mnr. Rd. and Mjr. Channel)	Roadway Relocation + Major Channel
(Mnr. Rd. and Mnr. Underground)	Roadway Relocation + Minor Underground Conveyance
(Capacity Increase)	Major Channel Upgrade (70% of new costs for increased capacity)
(Valley Channel with Ex. ROW)	Valley Channel - Existing Street ROW (50% of Land Acquisition Costs)
(Mjr. Channel and ROW)	Major Channel + 100% of Land Acquisition Required
(Reg. Basin and ROW)	Regional Detention + 100% of Land Acquisition Required

Summary of Projects - Central

PROJECT PRIORITY	DESCRIPTION	QUANTITY	UNIT	$ UNIT COST (1)	Millions of $ TOTAL COST
	BLM				
2	Wheeler Wash Levee (COE) (Note 1)	1	EA	11,900,000	$11.90
3	Winery Rd Flood Control (Mnr. Channel / Loc. Basin) (Note 2)	1	EA	2,067,000	$2.07
				Subtotal=	$13.97
	Central North				
4	Winchester Ave. (Mnr. Rd. and Mjr. Channel)	6,620	FT	491.2	$3.25
5	Lower Redrock Dr. (Mnr. Rd. and Mjr. Channel)	3,730	FT	491.2	$1.83
6	Upper Redrock Dr. (Mjr. Channel)	3,550	FT	337.9	$1.20
	Comstock Channel (Mjr. Channel)	7,470	FT	337.9	$2.52
	Lakeview Golf Course (Capacity Increase)	5,590	FT	139.2	$0.78
	Town Center Cannel (Mnr. Channel)	2,930	FT	198.9	$0.58
	Lakeview Golf Course Bypass Channel (Capacity Increase)	6,310	FT	139.2	$0.88
	Calvada Bv. (Mjr. Underground)	16,970	FT	444.2	$7.54
	Calvada North (Mnr. Rd. and Mnr. Underground)	3,500	FT	384.4	$1.35
	Industrial Rd. (Mnr. Rd. and Mnr. Channel)	3,640	FT	352.2	$1.28
	Calvada South (Mnr. Rd. and Mnr. Channel)	4,130	FT	352.2	$1.45
	Sub-Total (miles) =	12.2		Sub-Total=	$22.67
	Central				
	Blagg Rd. (Mnr. Rd. and Mjr. Channel)	6,250	FT	491.2	$3.07
9	Pahrump Valley Rd. (Mjr. Underground)	5,670	FT	444.2	$2.52
	Calvada Golf Course Channel (Capacity Increase)	4,460	FT	139.2	$0.62
	Mount Charleston Rd. (Mnr. Rd. and Mjr. Channel)	5,550	FT	491.2	$2.73
	Gamebird Rd. (Mjr. Underground)	5,300	FT	444.2	$2.35
	Unicorn Rd. and Channel (Mnr. Rd. and Mjr. Channel)	5,620	FT	491.2	$2.76
	Parkridge Rd. and Channel (Mnr. Rd. and Mjr. Channel)	9,580	FT	491.2	$4.71
	Sub-Total (miles) =	8.0		Sub-Total=	$18.76
	Central South				
8	Manse Rd. (Mjr. Underground)	15,670	FT	337.9	$5.29
13	Homestead Rd. (Mjr. Channel)	14,220	FT	337.9	$4.80
	Gamebird Rd. (Mjr. Channel)	5,200	FT	337.9	$1.76
	Malbou Ave. (Mnr. Rd. and Mjr. Channel)	6,770	FT	491.2	$3.33
	Mountain View Channel (Mnr. Rd. and Mnr. Channel)	15,040	FT	352.2	$5.30
15	Fair Grounds and Collection Structures (Reg. Basin)	1	EA	1,240,000	$1.24
	Fair Grounds Outlet Channel (Mjr. Channel)	7,760	FT	337.9	$2.62
	Sub-Total (miles) =	12.2		Sub-Total=	$24.34
	Central Grand Total (miles) =	32.5		Central Total=	$79.73

Notes:
(1) Typical Units Costs taken from Summary of Typical Costs (Table 1)
(2) Cost represents 35% of total, which total costs for this project are still under consideration by the United States Corps of Engineers
(3) Cost from "Winery Road Storm Water Management Report", completed for Nye County in 2004

Summary of Projects - Carpenter

PROJECT PRIORITY	DESCRIPTION	QUANTITY	UNIT	UNIT COST (1)	TOTAL COST
				$	Millions of $
	BLM				
10	Carpenter Canyon Basin (Reg. Basin)	9,143	SY	18.8	$0.17
	Indian Reservation Rd. (Mjr. Channel)	10,232	FT	337.9	$3.46
	Sub-Total (miles) =	1.9		Subtotal=	$3.63
	Carpenter				
11	Kellogg Rd. (Mnr. Rd. and Mjr. Channel)	2,635	FT	491.2	$1.29
12	Oakridge Ave. (Mnr. Rd. and Mjr. Channel)	5,402	FT	491.2	$2.65
14	Thouseandaire Bv. (Mjr. Channel)	17,545	FT	337.9	$5.93
	Turner Bv. (Mjr. Channel)	13,057	FT	337.9	$4.41
	Sub-Total (miles) =	7.3		Subtotal=	$17.92
	Carpenter Grand Total (miles) =	9		Carpenter Total=	$21.55

Summary of Projects - Trout

PROJECT PRIORITY	DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
				$	Millions of $
	BLM				
	Vicki Ann Deten. (Loc. Basin)	3,234	SY	14.0	$0.05
	Squaw Valley Deten. (Loc. Basin)	4,507	SY	14.0	$0.06
	Sub-Total (miles) =	n.a.		Subtotal=	$0.11
	Trout				
	Delores St. Channel (Mnr. Rd. and Mnr. Channel)	6,900	FT	352.2	$2.43
	Trout Cannel (Mnr. Rd. and Mnr. Channel)	10,750	FT	352.2	$3.79
	Sub-Total (miles) =	3.3		Subtotal=	$6.32
	Trout Grand Total (miles) =	3.3		Trout Total=	$6.43

Notes:
(1) Typical Units Costs taken from Summary of Typical Costs (Table 1)

SCHEDULE & COSTS - DRAINAGE & FLOOD CONTROL CIP PROJECTS

Priority	Project Name	Prop. FY	Project Area	Cost (Mil $)	10yr CIP 1 2006	2 2007	3 2008	4 2009	5 2010	6 2011	7 2012	8 2013	9 2014	10 2015	Future Projects over the Next 10 yrs. 11 2016	12 2017	13 2018	14 2019	15 2020	16 2021	17 2022	18 2023	19 2024	20 2025	21 2026	22 2027	23 2028	24 2029	25 2030
1	Area Drainage Master Plans	2006	All Areas	1.00	$0.30	$0.23	$0.23	$0.23																				
2	Wheeler Wash Levee (COE) (Note 1)	2008	Central-BLM	11.90			$2.98	$2.98	$2.98	$2.98																		
3	Winery Rd Flood Control (Mnr. Channel / Loc. Basin) (Note 2)	2007	Central-BLM	2.07	$0.31	$0.52	$0.62	$0.62																				
4	Winchester Ave. (Mnr. Rd. and Mjr. Channel)	2008	Central	3.25			$0.98	$0.98	$1.30																			
5	Lower Redrock Dr. (Mnr. Rd. and Mjr. Channel)	2009	Central	1.83				$0.55	$0.55	$0.73																		
6	Upper Redrock Dr. (Mjr. Channel)	2009	Central	1.20				$0.36	$0.36	$0.48																		
7	Lower Warren St. (Valley Cannel)	2009	North	5.83				$0.58	$1.46	$2.04	$1.75																	
8	Manse Rd. (Mjr. Underground)	2009	Central	5.29				$0.53	$1.32	$1.85	$1.59																	
9	Pahrump Valley Rd. (Mjr. Underground)	2011	Central	2.52						$0.84	$0.84	$0.84																
10	Carpenter Canyon Basin (Reg. Basin)	2012	Carpenter-BLM	0.17							$0.05	$0.05	$0.07															
11	Kellogg Rd. (Mnr. Rd. and Mjr. Channel)	2012	Carpenter	1.29							$0.43	$0.43	$0.43															
12	Oakridge Ave. (Mnr. Rd. and Mjr. Channel)	2012	Carpenter	2.65							$0.66	$0.66	$0.66	$0.66														
13	Homestead Rd. (Mjr. Channel)	2013	Central	4.80								$1.92	$0.96	$0.96	$0.96													
14	Thouseandaire Bv. (Mjr. Channel)	2014	Carpenter	5.93									$2.96	$2.37	$0.59													
15	Fair Grounds and Collection Structures (Reg. Basin)	2015	Central	1.24										$0.62	$0.62													
16	Upper Warren St. (Valley Channel with Ex. ROW)	2015	North	3.14										$1.26	$0.63	$1.26												
	Future Projects not included in 10yr CIP that could be Completed by 2030																											
17	Fair Grounds Outlet Channel (Mjr. Channel)		Central	2.62											$0.87	$0.87	$0.87											
18	Delores St. Channel (Mnr. Rd. and Mnr. Channel)		Trout	2.43											$0.81	$0.81	$0.81											
19	Vicki Ann Deten. (Loc. Basin)		Trout-BLM	0.05											$0.02	$0.02	$0.02											
20	Bell Vista A. Deten. (Reg. Basin)		North	0.31												$0.10	$0.10	$0.10										
21	Turner Bv. (Mjr. Channel)		Carpenter	4.41												$1.47	$1.47	$1.47										
22	Indian Reservation Rd. (Mjr. Channel)		Carpenter-BLM	3.46													$1.15	$1.15	$1.15									
23	Comstock Channel (Mjr. Channel)		Central	2.52													$0.84	$0.84	$0.84									
24	Calvada Golf Course Channel (Capacity Increase)		Central	0.62														$0.21	$0.21	$0.21								
25	Six Mile Spring (Valley Cannel)		North	5.69														$1.42	$1.42	$1.42	$1.42							
26	Mountain View Channel (Mnr. Rd. and Mnr. Channel)		Central	5.30														$1.32	$1.32	$1.32	$1.32							
27	Gamebird Rd. (Mjr. Channel)		Central	1.76															$0.59	$0.59	$0.59							
28	Bonnavitch St. (Valley Cannel)		North	4.07															$1.02	$1.02	$1.02	$1.02						
29	Malbou Ave. (Mnr. Rd. and Mjr. Channel)		Central	3.33																$1.11	$1.11	$1.11						
30	Mount Charleston Rd. (Mnr. Rd. and Mjr. Channel)		Central	2.73																$0.68	$0.68	$1.36						
31	Bass Basin (Reg. Basin and ROW)		North	0.83																	$0.28	$0.28	$0.28					
32	Lakeview Golf Course (Capacity Increase)		Central	0.78																	$0.19	$0.19	$0.39					
33	Murphy St. (Valley Cannel)		North	5.22																	$1.31	$1.31	$2.61					
34	Town Center Cannel (Mnr. Channel)		Central	0.58																		$0.15	$0.15	$0.29				
35	Calvada Bv. (Mjr. Underground)		Central	7.54																		$2.51	$2.51	$2.51				
36	Joanita St. Basin (Reg. Basin and ROW)		North	0.25																		$0.08	$0.08	$0.08				
37	Squaw Valley Deten. (Loc. Basin)		Trout-BLM	0.06																		$0.02	$0.02	$0.02				
38	Calvada North (Mnr. Rd. and Mnr. Underground)		Central	1.35																			$0.45	$0.45	$0.45			
39	Bell Vista Av. (Mjr. Channel)		North	1.35																			$0.45	$0.45	$0.45			
40	Industrial Rd. (Mnr. Rd. and Mnr. Channel)		Central	1.28																			$0.43	$0.43	$0.43			
41	Gamebird Rd. (Mjr. Underground)		Central	2.35																				$0.78	$0.78	$0.78		
42	Woodchips Rd. (Mjr. Channel and ROW)		North	3.05																				$1.02	$1.02	$1.02		
43	Blagg Rd. (Mnr. Rd. and Mjr. Channel)		Central	3.07																				$1.02	$1.02	$1.02		
44	Unicorn Rd. and Channel (Mnr. Rd. and Mjr. Channel)		Central	2.76																				$0.92	$0.92	$0.92		
45	Leslie St. (Mjr. Channel and ROW) and (Mnr. Rd. and Mjr. Channel)		North	5.71																				$1.90	$1.90	$1.90		
46	Trout Cannel (Mnr. Rd. and Mnr. Channel)		Trout	3.79																				$1.26	$1.26	$1.26		
47	Parkridge Rd. and Channel (Mnr. Rd. and Mjr. Channel)		Central	4.71																				$0.94	$1.88	$1.88		
48	Last Chance (Mjr. Channel)		North	2.98																					$0.99	$0.99	$0.99	
49	Calvada South (Mnr. Rd. and Mnr. Channel)		Central	1.45																					$0.29	$0.58	$0.58	
50	Last Chance Basin (Reg. Basin)		North	0.32																					$0.11	$0.11	$0.11	
51	Lakeview Golf Course Bypass Channel (Capacity Increase)		Central	0.88																					$0.29	$0.29	$0.29	
52	Calvada North (Mjr. Channel)		North	3.53																						$1.17	$1.17	$1.17
53	Wood Canyon (Mjr. Channel)		North	2.85																						$0.95	$0.95	$0.95
54	Wood Canyon Basin (Reg. Basin)		North	0.49																						$0.16	$0.16	$0.16
	Totals			$150.6	$0.6	$0.8	$4.8	$6.8	$8.0	$8.9	$5.3	$3.9	$5.1	$5.9	$4.5	$4.5	$5.3	$6.5	$6.5	$6.3	$7.9	$8.0	$7.4	$8.0	$9.2	$10.5	$9.3	$4.3	$2.3
	AVERAGE COST PER YEAR FOR 30 yrs =			$5.02			Total every 5yrs =	$21.0						$29.1					$27.3				$37.6				$35.5

10yr CIP Envelope

Notes:

(1) Typical Units Costs taken from Summary of Typical Costs (Table 1)
(2) Cost represents 35% of total, which total costs for this project are still under consideration by the United States Corps of Engineers
(3) Cost from "Winery Road Storm Water Management Report", completed for Nye County in 2004

GRAPH OF ANNUAL SPENDING - DRAINAGE & FLOOD CONTROL CIP PROJECTS

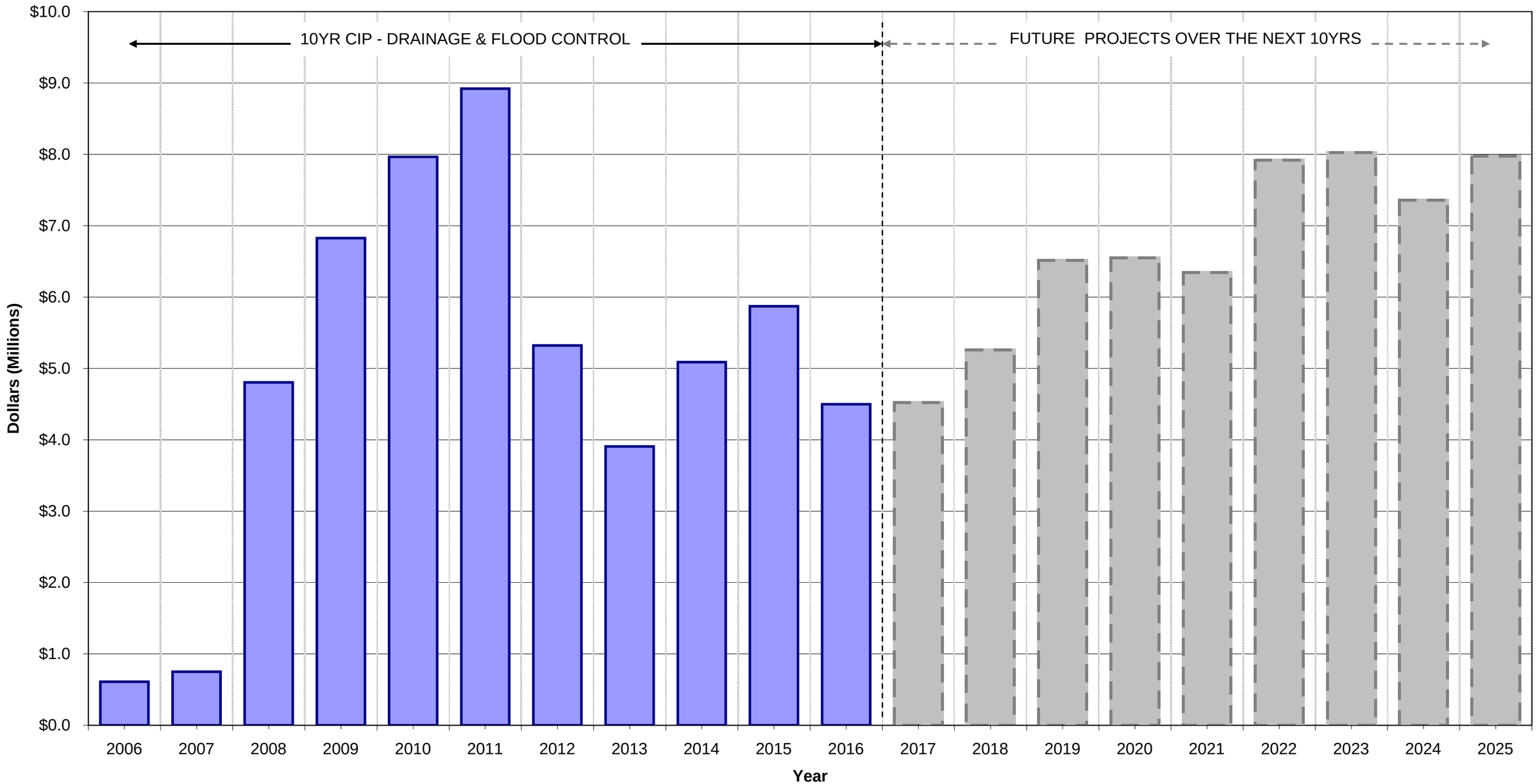

Table 1 - Summary of Typical Unit Costs

Description of Typical Facilities	UNIT	CONSTRUCTION COSTS	ENGR., ADMIN & CONTINGENCIES	TOTAL COST PER UNIT
Roadway Relocation				
Roadway Relocation - Collector (Table 2)	LF	$104.70	$48.60	$153.30
Drainage Channels - Conveyance Only				
Minor Channel (Table 3)	LF	$132.50	$66.40	$198.90
Major Channel (Table 4)	LF	$225.10	$112.80	$337.90
Stormwater Detention Basins				
Local Detention (Table 5)	SY	$9.30	$4.70	$14.00
Regional Detention (Table 6)	SY	$12.50	$6.30	$18.80
Underground Conveyance				
Minor Underground (Table 7)	LF	$154.00	$77.10	$231.10
Major Underground (Table 8)	LF	$296.00	$148.20	$444.20
Valley Drainage Channel - Conveyance Only				
Major Valley Channel (Table 9)	LF	$506.50	$116.50	$623.00
Possible Facilities Combinations & Variations				
Roadway Relocation + Minor Channel	LF			$352.20
Roadway Relocation + Major Channel	LF			$491.20
Roadway Relocation + Minor Underground Conveyance	LF			$384.40
Major Channel Upgrade (70% of new costs for increased capacity)	LF			$139.23
Valley Channel - Existing Street ROW (50% of Land Acquisition Costs)	LF	50% =	$69	$554.17
Major Channel + 100% of Land Acquisition Needed	LF	$50,000 / AC =	$80	$417.90
Regional Detention + 100% of Land Acquisition Needed	SY	$50,000 / AC =	$10	$29.13

Table 2 - OPC Typical Roadway Relocation - Rural Collector

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST per Linear Ft.
Roadway Grading (Removal and Recompaction)	2.2	CY	$6.00	$13.20
3" AC PAVEMENT C-3/4 Mix (36 Ft Section)	4.0	SY	$10.00	$40.00
6" ABC	4.0	SY	$6.00	$24.00
Subgrade Preparation	4.0	SY	$1.00	$4.00
Tack Coat	4.0	SY	$0.30	$1.20
Roadway Stripping	1	LF	$2.00	$2.00
Roadway Side Ditch with/Culvert Pipes at Driveways (One Side / every 200ft)	1.0	LF	$5.00	$5.00
Adjust Manhole Frame & Cover, Cos 2270 (One Every 300 Ft)	0.003	EA	$500.00	$1.50
Sawcut Pavement (At Each Intersection Every 1/2 Mi)	0.0038	LF	$3.00	$0.01
Adjust Valve Box & Cover, Cos 2270 (One Every 300 Ft)	0.003	EA	$350.00	$1.05
Adjust Meter Box (One Every 100 Ft)	0.01	EA	$250.00	$2.50
Remove and Dispose Existing Pavement (30 Ft Roadway Section)	3.3	SY	$3.00	$9.90
Relocate Traffic and Roadway Signs (One Every 150 Ft)	0.006	EA	$60.00	$0.36

			Subtotal	**$104.70**
			Dust, Erosion and Quality Control (5%)	**$5.20**
			Construction Survey (2%)	**$2.10**
			Contingencies (15%)	**$15.70**
			Construction Subtotal	**$127.70**
			Administration and Legal (5%)	**$6.40**
			Engineering Design (10%)	**$12.80**
			Construction Management (8%)	**$6.40**

Total Cost per LF=	**$153.30**

Notes:

Roadway construction consists of subgrade compaction, bank gravel with dozer spread, ABC or Bituminous Paving for Top Course, Driveway Reconstruction with 18-inch CMP pipe and an extra $10/LF for demolition of existing AC Pavement where applicable.

Unit prices based on construction costs for similar work on projects in Arizona & Nevada

Table 3 - OPC Typical Drainage Channel - Minor

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST per Linear Ft.
Clearing and Grubbing (Channel Top Width Plus 10' Access Road)	4.4	SY	$0.74	$3.26
Channel Grading (Soil Export, 5 ft depth)	5.5	CY	$6.00	$33.00
Shotcrete Channel (10ft base, Steel Mesh)	2.8	SY	$25.00	$70.00
Culvert Street Crossing (Two Barrel, 6' by 4', every 1/2 mi)	0.0004	EA	$24,000.00	$9.60
Inlet and Outlet Structures (one every 1/2 mile)	0.0004	EA	$6,000.00	$2.40
Drainage Easements (appx.1.50 ac per mile)	12.40	SQ FT	$1.15	$14.26

			Subtotal	**$132.50**
			Dust, Erosion and Quality Control (5%)	**$6.60**
			Construction Survey (2%)	**$2.70**
			Contingencies (15%)	**$19.90**
			Construction Subtotal	**$161.70**
			Administration and Legal (5%)	**$8.10**
			Engineering Design (10%)	**$16.20**
			Construction Management (8%)	**$12.90**

Total Cost per LF=	**$198.90**

Notes:

For acquistion of easements on private land a cost of $50,000 per acre is assumed.

Unit prices based on construction costs for similar work on drainage projects in Arizona & Nevada.

Table 4 - OPC Typical Drainage Channel - Major

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST per Linear Ft.
Clearing and Grubbing (Channel Top Width Plus 10' Access Road)	4.4	SY	$0.74	$3.26
Canal Grading (Soil Export, 5 ft depth)	7.4	CY	$6.00	$44.40
Shotcrete Channel (30ft base, Steel Mesh)	4.9	SY	$25.00	$122.50
Culvert Street Crossing (Two Barrel, 6' by 6', every 1/2 mi)	0.0004	EA	$54,000.00	$21.60
Inlet and Outlet Structures (one every 1/2 mile)	0.0004	EA	$12,000.00	$4.80
Drainage Easements (appx.3.0 ac per mile)	24.80	SQ FT	$1.15	$28.52

			Subtotal	**$225.10**
			Dust, Erosion and Quality Control (5%)	**$11.30**
			Construction Survey (2%)	**$4.50**
			Contingencies (15%)	**$33.80**
			Construction Subtotal	**$274.70**
			Administration and Legal (5%)	**$13.70**
			Engineering Design (10%)	**$27.50**
			Construction Management (8%)	**$22.00**

Total Cost per LF=	**$337.90**

Notes:

For acquistion of easements on private land a cost of $50,000 per acre is assumed.

Unit prices based on construction costs for similar work on drainage projects in Arizona & Nevada.

Table 5 - OPC Typical Basin - Local Detention

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST per SY
Clearing and Grubbing (Gross Area of Basin)	1	SY	$0.74	$0.74
Basin Grading (Soil Export, 6 ft depth)	2	CY	$2.00	$4.00
Soil Stabilization (Geotextile Mesh)	1	SY	$1.00	$1.00
Outlet Structure (one per 2 acres)	0.0001	EA	$12,000.00	$1.20
Overflow Structure Between Detention Basins (one per acre)	0.0002	EA	$6,000.00	$1.20
Public Land Acquisition Fees (assume 120% of basin size)	10.80	SQ FT	$0.11	$1.19

			Subtotal	**$9.30**
			Dust, Erosion and Quality Control (5%)	**$0.50**
			Construction Survey (2%)	**$0.20**
			Contingencies (15%)	**$1.40**
			Construction Subtotal	**$11.40**
			Administration and Legal (5%)	**$0.60**
			Engineering Design (10%)	**$1.10**
			Construction Management (8%)	**$0.90**

Total Cost per SY=	**$14.00**

Notes:

For acquistion of easements on private land a cost of $50,000 per acre is assumed.

Unit prices based on construction costs for similar work on drainage projects in Arizona & Nevada.

Table 6 - OPC Typical Basin - Regional Detention

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST per SY
Clearing and Grubbing (Gross Area of Basin)	1	SY	$0.74	$0.74
Basin Grading (Soil Export, 9 ft depth)	3	CY	$2.00	$6.00
Soil Stabilization (Geotextile Mesh)	1	SY	$1.00	$1.00
Outlet Structure (one per 2 acres)	0.0001	EA	$18,000.00	$1.80
Overflow Structure Between Detention Basins (one per acre)	0.0002	EA	$9,000.00	$1.80
Public Land Acquisition Fees (assume 120% of basin size)	10.80	SQ FT	$0.11	$1.19

			Subtotal	**$12.50**
			Dust, Erosion and Quality Control (5%)	**$0.60**
			Construction Survey (2%)	**$0.30**
			Contingencies (15%)	**$1.90**
			Construction Subtotal	**$15.30**
			Administration and Legal (5%)	**$0.80**
			Engineering Design (10%)	**$1.50**
			Construction Management (8%)	**$1.20**

Total Cost per SY=	**$18.80**

Notes:

For acquistion of easements on private land a cost of $50,000 per acre is assumed.

Unit prices based on construction costs for similar work on drainage projects in Arizona & Nevada.

Table 7 - OPC Typical Underground Conveyance - Minor

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST per Linear Ft.
72-inch Underground Pipe (RGCP or CMP)	1	LF	$130.00	$130.00
18-inch Stubout for Future Catch Basins (One Every 200ft)	0.005	EA	$1,000.00	$5.00
Pavement Cut and Replacement (10 ft wide cut)	10.00	SQ FT	$1.50	$15.00
Drainage Easements (appx. 0.20 ac basin per 0.50 mile)	3.30	SQ FT	$1.15	$3.80
Public Land Acquisition Fees (approx. 0.2 ac for outlet per mile)	1.65	SQ FT	$0.11	$0.18

			Subtotal	**$154.00**
			Dust, Erosion and Quality Control (5%)	**$7.70**
			Construction Survey (2%)	**$3.10**
			Contingencies (15%)	**$23.10**
			Construction Subtotal	**$187.90**
			Administration and Legal (5%)	**$9.40**
			Engineering Design (10%)	**$18.80**
			Construction Management (8%)	**$15.00**

Total Cost per LF=	**$231.10**

Notes:

These costs assume the stormwater conveyance pipeline is built within the road right-of-way with cut and replacement of existing roadway pavement required.

For acquistion of easements on private land a cost of $50,000 per acre is assumed.
For acquisition of public lands a cost of $5,000 per acre is assumed.

Pipeline stubouts are provided for connecting future catch basins when a new roadway is constructed with curb and gutter.

Unit prices based on construction costs for similar work on drainage projects in Arizona & Nevada.

Table 8 - OPC Typical Underground Conveyance - Major

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST per Linear Ft.
Double Barrel 72-inch Pipe (RGCP or CMP) or 10'x6' Concrete Box Culvert	1	LF	$260.00	$260.00
18-inch Stubout for Future Catch Basins (One Every 200ft)	0.005	EA	$1,000.00	$5.00
Pavement Cut and Replacement (18 ft wide cut)	18.00	SQ FT	$1.50	$27.00
Drainage Easements (appx. 0.20 ac basin per 0.50 mile)	3.30	SQ FT	$1.15	$3.80
Public Land Acquisition Fees (approx. 0.2 ac for outlet per mile)	1.65	SQ FT	$0.11	$0.18

			Subtotal	**$296.00**
			Dust, Erosion and Quality Control (5%)	**$14.80**
			Construction Survey (2%)	**$5.90**
			Contingencies (15%)	**$44.40**
			Construction Subtotal	**$361.10**
			Administration and Legal (5%)	**$18.10**
			Engineering Design (10%)	**$36.10**
			Construction Management (8%)	**$28.90**

Total Cost per LF=	**$444.20**

Notes:

These costs assume the stormwater conveyance pipeline is built within the road right-of-way with cut and replacement of existing roadway pavement required.

For acquistion of easements on private land a cost of $50,000 per acre is assumed.
For acquisition of public lands a cost of $5,000 per acre is assumed.

Pipeline stubouts are provided for connecting future catch basins when a new roadway is constructed with curb and gutter.

Unit prices based on construction costs for similar work on drainage projects in Arizona & Nevada.

Table 9 - OPC Valley Drainage Channel - Major

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST per Linear Ft.
Clearing and Grubbing (Channel Top Width and Overbank)	13.3	SY	$0.74	$9.84
Right of Way Acquisition (Full Drainage Easement Width)	13.3	SY	$10.35	$137.66
Canal Grading (Soil Export, 6 ft depth, Trapezoidal Channel)	19.6	CY	$5.00	$98.00
Earthen Channel (60ft base, Soil Stabilization, Landscaping)	12.0	SY	$12.00	$144.00
Culvert Street Crossing (Multiple Barrel, 10' by 6', every 1/2 mi)	0.0004	EA	$64,000.00	$25.60

			Subtotal	**$415.10**
			Dust, Erosion and Quality Control (5%)	**$20.80**
			Construction Survey (2%)	**$8.30**
			Contingencies (15%)	**$62.30**
			Construction Subtotal	**$506.50**
			Administration and Legal (5%)	**$25.30**
			Engineering Design (10%)	**$50.70**
			Construction Management (8%)	**$40.50**

Total Cost per LF=	**$623.00**

Notes:

For acquisition of easements on private land a cost of $50,000 per acre is assumed.

Unit prices based on construction costs for similar work on drainage projects in Arizona & Nevada.

Map APPENDIX

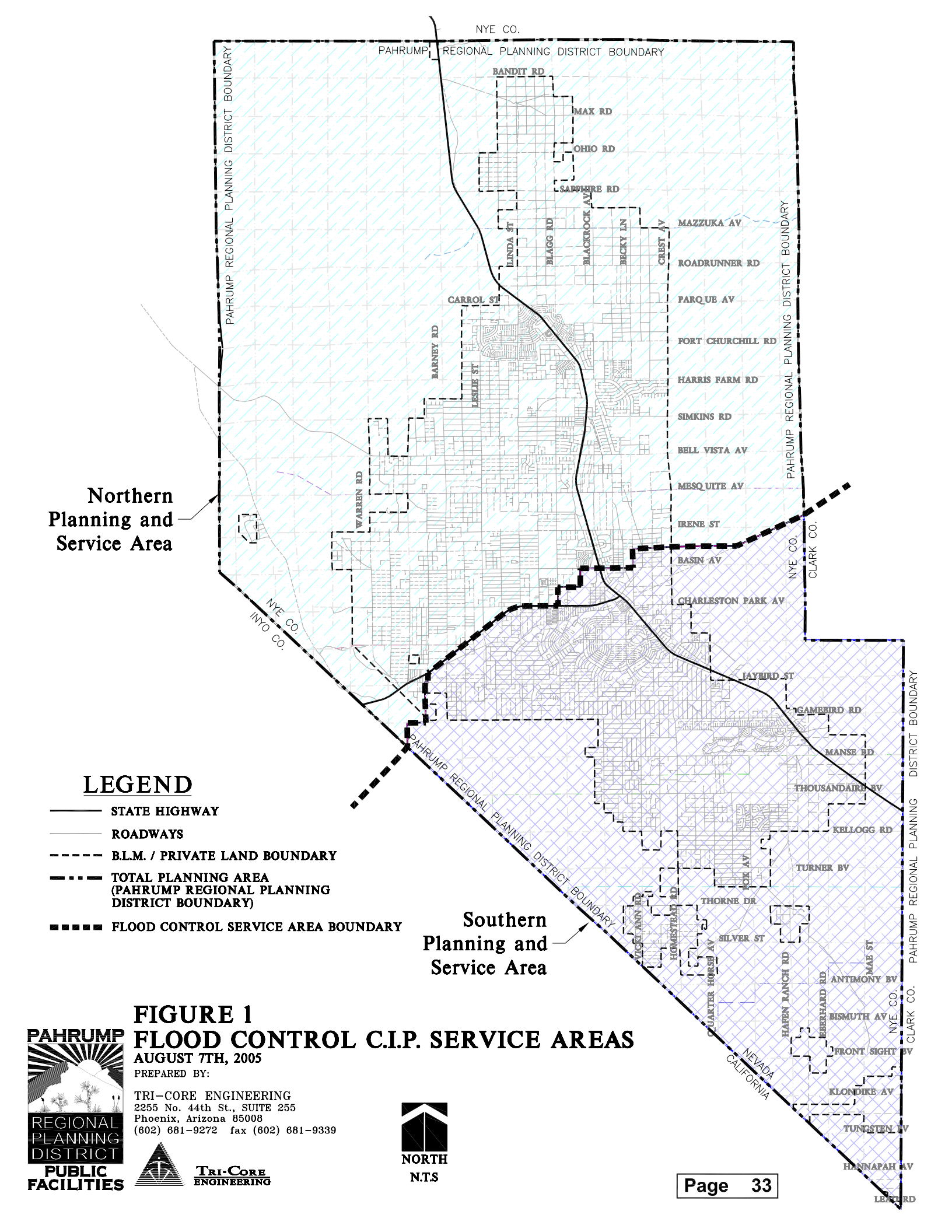

FIGURE 1
FLOOD CONTROL C.I.P. SERVICE AREAS

AUGUST 7TH, 2005

PREPARED BY:

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2255 No. 44th St., SUITE 255
Phoenix, Arizona 85008
(602) 681-9272 fax (602) 681-9339

PAHRUMP REGIONAL PLANNING DISTRICT PUBLIC FACILITIES

TRI-CORE ENGINEERING

LEGEND

- LOCAL STREETS
- HISTORIC DRAINAGE PATH
- BLM LAND
- WATERSHED BOUNDARY
- DIRECTION OF FLOW
- FLOW
- SPLIT FLOW
- CONVERGENCE FLOW

Project Sub-Areas

- SUB AREA GEOGRAPHICAL BOUNDARY
- NORTH-JOHNNY CREEK AREA
- NORTH-NORTH AREA
- NORTH-CENTRAL AREA
- NORTH-SOUTH AREA

FLOOD CONTROL IMPROVEMENTS

Major Improvements

- RIGHT OF WAY ACQUISITION REQUIRED
- VALLEY CHANNEL
- MAJOR ARTERIAL (COSTS UNDER ROADWAY AND TRAFFIC CIP)

Improvements (10yr-25yr)

- COLLECTOR
- CHANNEL
- MINOR UNDERGROUND STORMDRAIN
- MAJOR UNDERGROUND STORMDRAIN
- DETENTION BASIN

NORTH

GRAPHIC SCALE

1 0 1/2 1

1 inch = 1 miles

2006-2015 Capital Improvement Plan

Figure 3

Drainage and Flood Control

Northern Service/Planning Area

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8840 E. CHAPARRAL RD.
SUITE 150
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FAX (480) 346-3201

PAHRUMP REGIONAL PLANNING DISTRICT

PUBLIC FACILITIES

DATE
09-12-05
FILENAME
CIP-FC- FIG 3 North.dwg
PROJECT NO.
5112.0005


2006-2015 Capital Improvement Plan
FIGURE 2
Drainage & Flood Control
Southern Service/Planning Area
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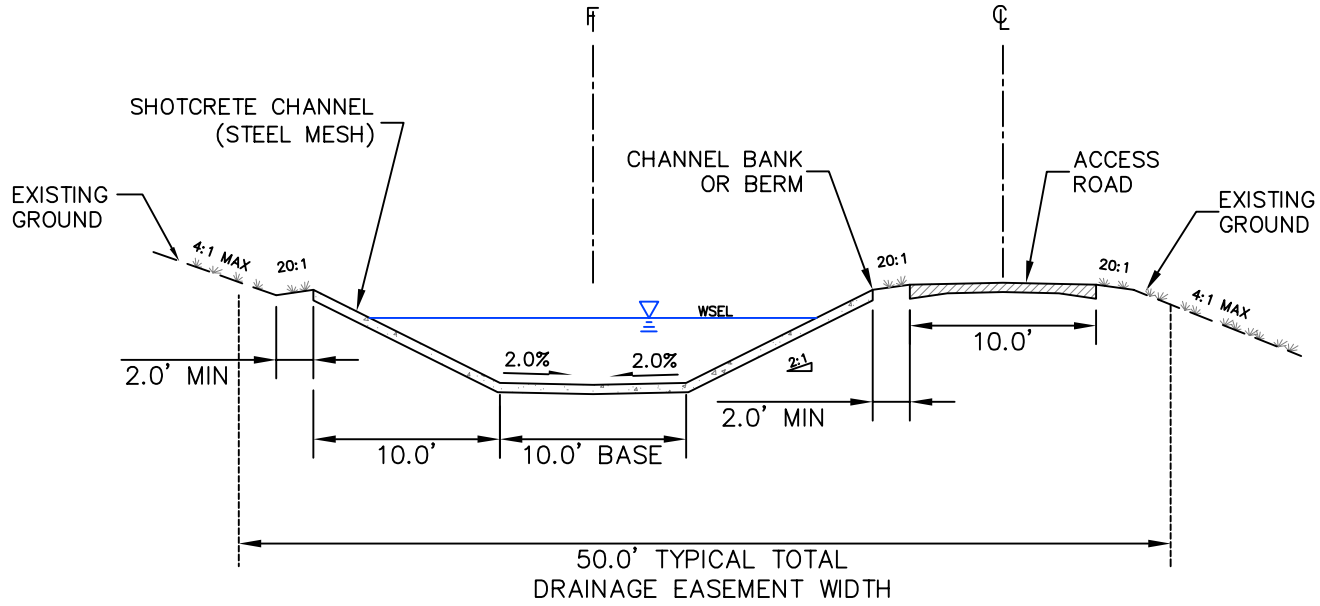
PAHRUMP REGIONAL PLANNING DISTRICT
PUBLIC FACILITIES
NORTH
GRAPHIC SCALE
1 inch = 1/2 miles
DATE
09.08.05
FILENAME
CIP-FC FIG 2 South.dwg
PROJECT NO.
5112.0005
LEGEND
LOCAL STREETS
HISTORIC DRAINAGE PATH
BLM LAND
WATERSHED BOUNDARY
DIRECTION OF FLOW
FLOW
SPLIT FLOW
CONVERGENCE FLOW
Project Sub-Areas
SUB AREA GEOGRAPHICAL BOUNDARY
CENTRAL AREA
CARPENTER AREA
TROUT AREA
TROUT SOUTH AREA
FLOOD CONTROL IMPROVEMENTS
Minor Improvements
RURAL COLLECTOR
MINOR CHANNEL
MINOR UNDERGROUND STORMDRAIN
LOCAL DETENTION BASIN
Major Improvements
MAJOR ARTERIAL (COSTS UNDER ROADWAY
RIGHT OF WAY ACQUISITION REQUIRED
AND TRAFFIC CIP)
MAJOR CHANNEL
MAJOR UNDERGROUND STORM DRAIN
REGIONAL DETENTION BASIN
Improvements (10yr-25yr)
COLLECTOR
CHANNEL
UNDERGROUND STORMDRAIN
DETENTION BASIN
PAHRUMP REGIONAL PLANNING DISTRICT BOUNDARY
NEVADA
CALIFORNIA
NYE CO.
CLARK CO.
MOUND SPRING DRY LAKE BED
COE WHEELER WASH LEVEE [FY 2006]
WINERY ROAD BASIN [FY 2007]
FAIR GROUNDS BASIN [2015]
MAJOR CROSSING AND COLLECTION SYSTEM
FAIR GROUND OUTLET CHANNEL
MOUNTAIN VIEW CHANNEL
MANSE RD. ROAD / UNDERGROUND [FY 2009]
MANSE RD. ROAD / UN-GRD [FY 2009]
GAMEBIRD RD. ROAD / UNDERGROUND
GAMEBIRD RD. ROAD / CHANNEL
THOUSANDAIRE BV. ROAD / CHANNEL [FY 2014]
OAKRIDGE AV. CHANNEL [FY 2012]
KELLOGG RD. CHANNEL [FY 2012]
CARPENTER CANYON BASIN [FY 2012]
INDIAN RESERVATION RD. CHANNEL
TURNER BV. ROAD / CHANNEL
VICKI ANN BASIN
SQUAW VALLEY BASIN
LAKEVIEW GOLF COURSE CHANNEL CAPACITY
TOWN CENTER CHANNEL
COMSTOCK CHANNEL CAPACITY
LOWER RED ROCK ROAD / CHANNEL [FY 2009]
WINCHESTER AV. ROAD / CHANNEL [FY 2008]
PAHRUMP VALLEY RD. ROAD / UNDERGROUND [FY 2011]
HOMESTEAD RD. ROAD / CHANNEL [FY 2013]
WINERY ROAD CHANNEL [FY 2007]
CHANNEL OUTLET
MAJOR CROSSING
Basin Av
Charleston Park Av
Flamingo Rd
Jaybird St
Gamebird Rd
Manse Rd
Thousandaire Bv
Kellogg Rd
Turner Bv
Thorne Dr
Silver St
Nevada Rt. 160
Nevada Rt. 372
Dandelion St
Chromium Bv



1' TYPICAL FREE BOARD
SINGLE BARREL CULVERT AT CROSSING STREET
TYPICAL CONVEYANCE: 300-600 CFS

TYPICAL SECTION - MINOR CHANNEL

PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

April 15, 2005

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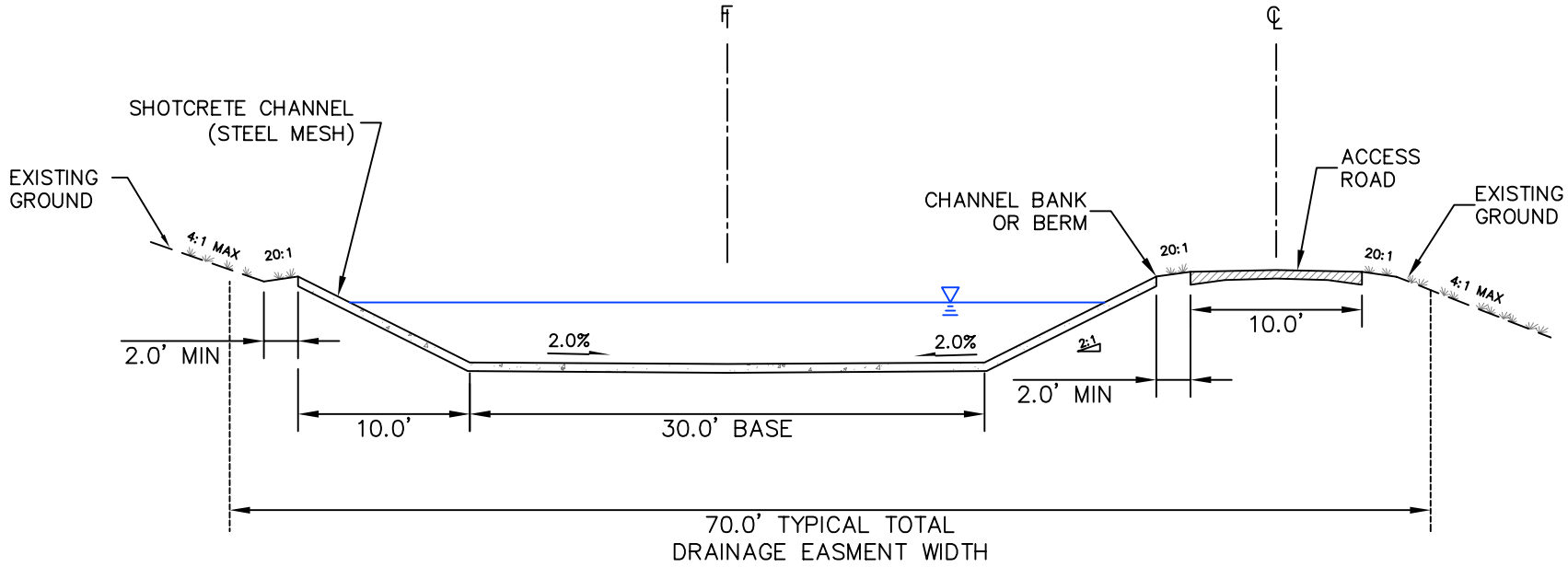
PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

NYE COUNTY, NEVADA

FC Figure 4



1' TYPICAL FREE BOARD
MULTIPLE BARREL CULVERT AT CROSSING STREET
TYPICAL CONVEYANCE: 600-1,200 CFS

TYPICAL SECTION - MAJOR CHANNEL

PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

April 15, 2005

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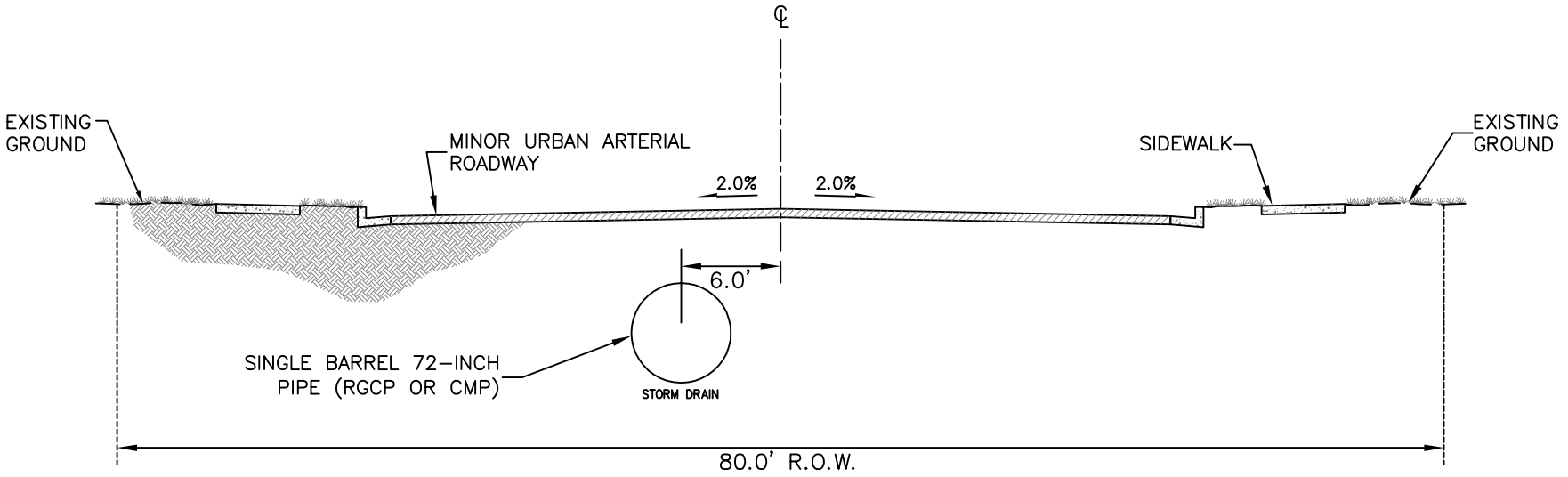
PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

NYE COUNTY, NEVADA

FC Figure 5



LOCATION MAY VARY DUE TO UNDERGROUND UTILITY AND OVERHEAD POWER LOCATIONS
TYPICAL CONVEYANCE: 100 - 200 CFS

TYPICAL SECTION - MINOR UNDERGROUND

PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

April 15, 2005

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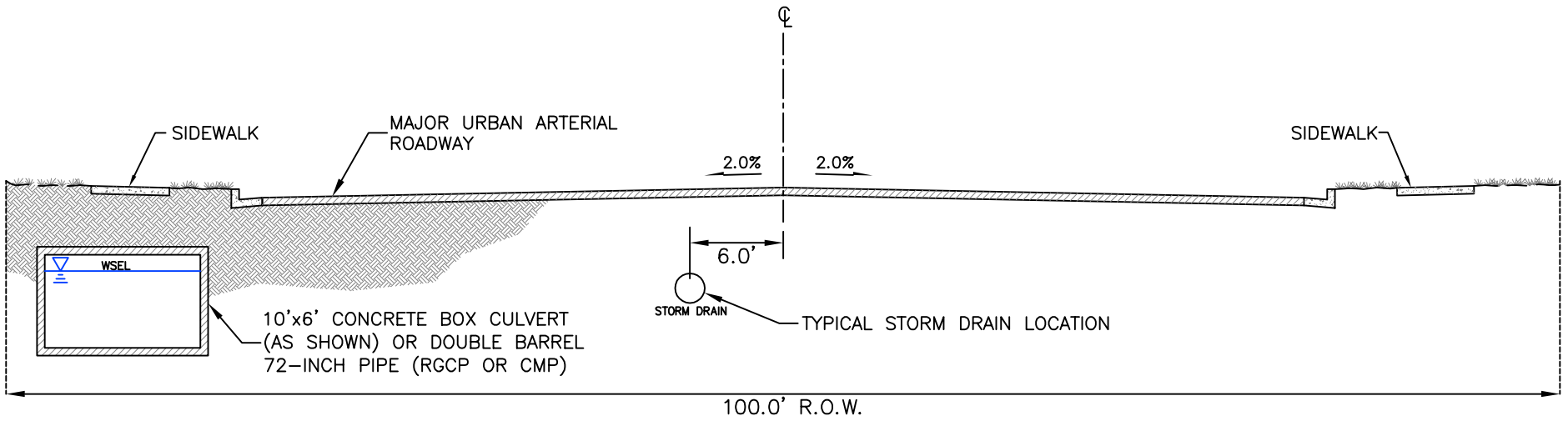
PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

NYE COUNTY, NEVADA

FC Figure 6



LOCATION MAY VARY DUE TO UNDERGROUND UTILITY AND OVERHEAD POWER LOCATIONS
TYPICAL CONVEYANCE: 300 - 1,000 CFS

TYPICAL SECTION - MAJOR UNDERGROUND

PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

April 15, 2005

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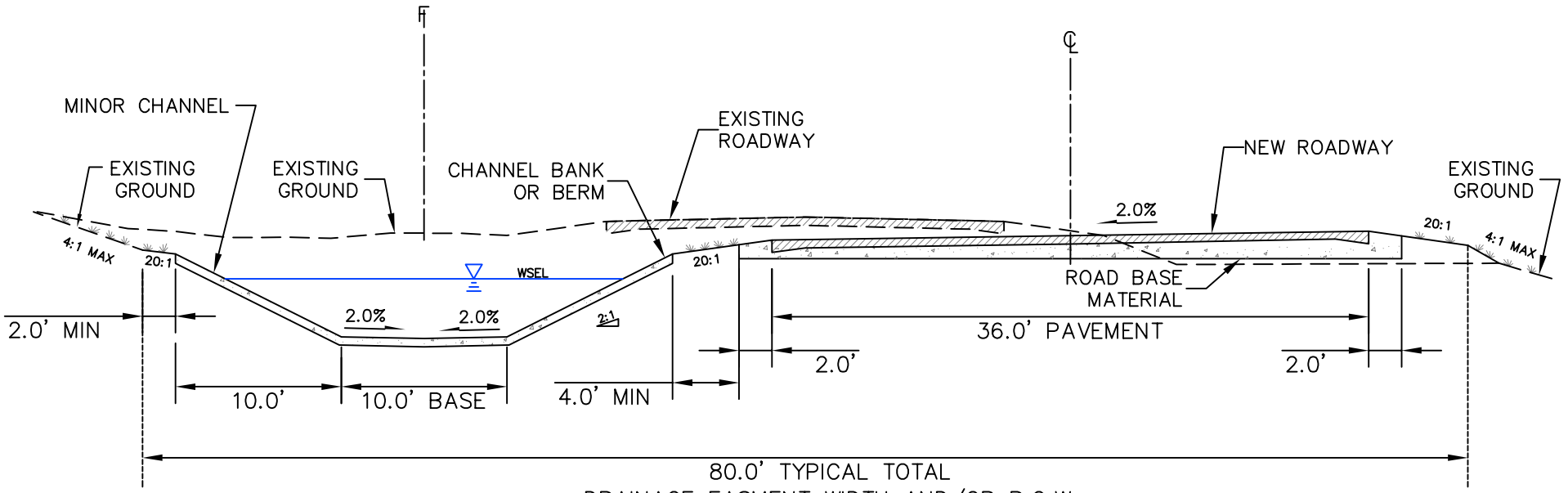
PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

NYE COUNTY, NEVADA

FC Figure 7



1' TYPICAL FREE BOARD
SINGLE BARREL CULVERT AT CROSSING STREET
R.O.W/EASEMENT WILL VARY BY ROAD CLASS
TYPICAL CONVEYANCE: 300 - 800* CFS
(* FULL CONVAYENCE WITHOUT FREE BOARD)

TYPICAL SECTION - ROADWAY AND CHANNEL

PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

April 15, 2005

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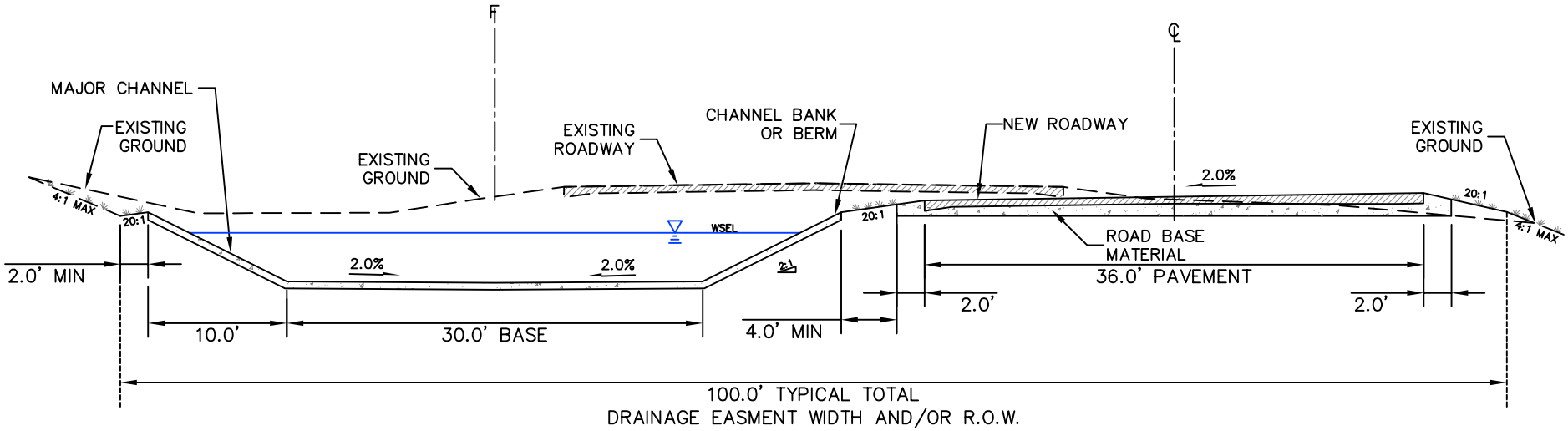
PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

NYE COUNTY, NEVADA

FC Figure 8



1' TYPICAL FREE BOARD
MULTIPLE BARREL CULVERT AT CROSSING STREET
R.O.W/EASEMENT WILL VARY BY ROAD CLASS
TYPICAL CONVEYANCE: 600 - 1,400* CFS
(* FULL CONVAYENCE WITHOUT FREE BOARD)

TYPICAL SECTION - MAJOR ROADWAY AND MAJOR CHANNEL

PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

April 15, 2005

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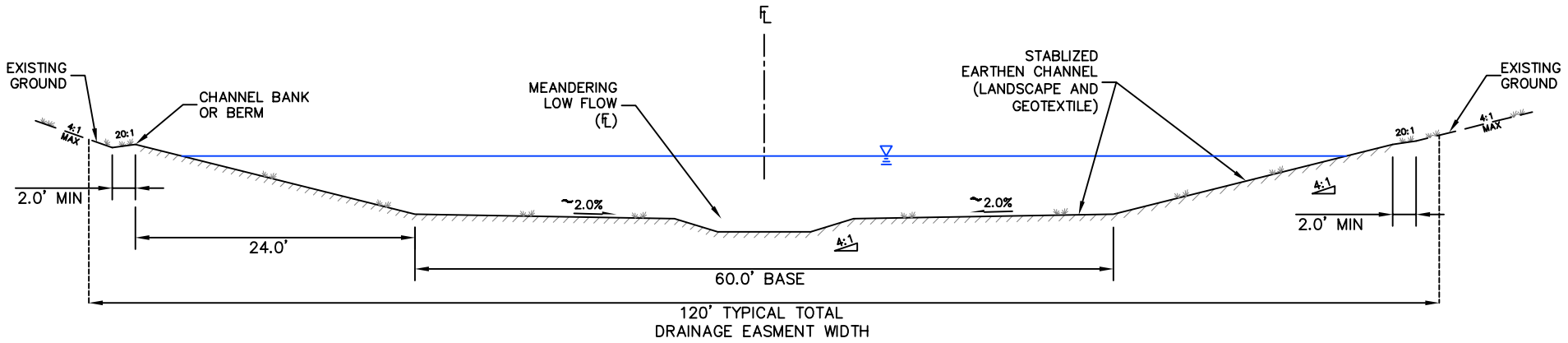
PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

NYE COUNTY, NEVADA

FC Figure 9



1' TYPICAL FREE BOARD
MULTIPLE BARREL CULVERT AT CROSSING STREETS
TYPICAL CONVEYANCE: 1,000-3,000 CFS

TYPICAL SECTION - MAJOR VALLEY CHANNEL

PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

July 25, 2005

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PAHRUMP REGIONAL PLANNING DISTRICT MASTER PLAN UPDATE

NYE COUNTY, NEVADA

FC Figure 10