BORDER ENVIRONMENTAL COOPERATION COMMISSION

# CITY OF WESTMORLAND, CALIFORNIA

# STEP II APPLICATION

## Project Title

***Wastewater Treatment Plant Expansion***
***For the City of Westmorland, California***

## Applicant


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# EXECUTIVE SUMMARY

The City of Westmorland, California (City) is located within Imperial County, approximately 30 miles north of the US/Mexico border. The population estimate in 1997, when the Facility Plan was prepared, ranged from 1,700 to 2,300, depending on the source of the estimate. Most of the residents of the city are low income.

The City owns and operates a failing wastewater treatment plant (WWTP) that was constructed in 1985, with an average daily flow capacity of 375,000 gallons per day (gpd). The WWTP discharges into agricultural drain Trifolium #6, which flows into the New River, located 3.5 miles downstream. The New River inturn flows 8 miles before terminating at the Salton Sea. The discharge will be completely maintained within U.S. territory, with no transboundary impacts expected. The existing plant is based on two series of aerated lagoons followed by sedimentation or stabilization ponds. The facility has evident problems, which include failing lagoon berms, an unreliable influent pump station, and the lack of effluent disinfection facilities.

In addition to structural and operational limitations, the existing plant needs to be expanded to provide additional capacity for future growth. Current flows to the plant are in excess of 300,000 gpd, which corresponds to 80 percent of the plant design capacity. The State of California requires that all treatment plant operators make provisions for plant expansion when daily average influent flows reach 80 percent of plant capacity.

The City has had a long history of being issued violation and citation notices from the California Regional Water Quality Control Board (CRWQCB). Because of a Time Schedule Order (TSO No, 97-110) issued by the CRWQCB on July 1997, the City is pursuing a remedy for the situation as aggressively as possible, as public health and the environment continue to be threatened by the current situation.

Based on the order to rehabilitate and expand the plant, a facility plan was prepared in January 1998 by Dudek & Associates to identify and develop alternatives and to recommend the best solution. The technology proposed to replace the failing plant was chosen after thoroughly investigating wastewater treatment options appropriate for a city the size of Westmorland. The various options were evaluated on the financial, social, and environmental aspects of each process considered. The technology identified as most suitable for the City is an extended aeration oxidation ditch. The new ditch will be located within the footprint of one of the existing ponds. Additionally, the new plant will include secondary clarification, effluent disinfection, and sludge handling facilities. The new WWTP will correct all existing deficiencies and meet the needs of the community for the next 20 years, based on projected growth estimates.

The proposed project complies with all environmental requirements, both at the state and federal level. A Negative Declaration was prepared on April 1998, as required by the California Environmental Quality Act (CEQA). The Negative Declaration includes biological and archaeological surveys, as required. The document does not identify any potential significant impacts and mitigation measures.

An Environmental Assessment has been prepared by the U.S. Department of Agriculture in conjunction with the Environmental Protection Agency (EPA). The EA was submitted to EPA on April 30, 1999 and a Finding of No Significant Impact (FONSI) was issued by EPA on May 06, 1999. The FONSI underwent a 30-day public comment period from May 06, 1999 to June 04, 1999.

Westmorland attempted to obtain funding to correct the present non-compliance situation from the State of California Proposition 204 program without success except for design and planning grant funds totaling $257,000. The United States Department of Agriculture - Rural Development (USDA-RD) on the other hand, has approved a loan/grant package, but this option will force the City to incur additional debt, which would in turn translate into higher user rate fees. Considering the low average household income of the community ($12,000 to $15,000 per year) and the current rates ($28.50 for water and $31.85 for sewer), it is believed that the City could not afford the proposed project without additional grant funds. The City is thus seeking grant funds from the Border Environment Infrastructure Fund (BEIF) administered by the North American Development Bank (NADB).

**TABLE ES-1**
**PROJECT COST ESTIMATES**

| Item/Task | Cost (US$) |
|---|---|
| Construction | $3,300,000 |
| Design Engineering/Project Management | $100,000 |
| Value Engineering | $20,000 |
| Bidding Services | $25,000 |
| Construction Management | $225,000 |
| Materials Quality Control | $25,000 |
| O&M Manual Preparation | $25,000 |
| Operation Support – Year 2000 | $40,000 |
| Assessment Engineering | $20,000 |
| Assessment District Fiscal Agent | $5,000 |
| Assessment District Bond | $35,000 |
| Facilities Plan | $257,200 |
| Contingency (10% of Construction) | $330,000 |
| **Subtotal** | **$4,407,200** |
| **Additional Costs Incurred to Date (Sunk Costs)** | |
| Regional Board Meetings | $10,000 |
| Influent Meter Installation | $7,500 |
| Black and Veatch Engineering Costs | $550,000 |
| Pump Repair and Replacement | $10,000 |
| **Subtotal:** | **$577,500** |
| **PROJECT TOTAL** | **$4,984,700** |

As shown in the above table, the total cost of the project is $4,984,700, although $577,500 of this amount correspond to previous expenses that have been paid for and thus are not included in the analysis of funding sources.

In addition to the construction cost identified above, the new WWTP will have an annual operation and maintenance cost of $202,400 during its first year of operation (i.e 2001). O&M costs are fluid-dependent and thus will vary on a yearly basis as a result of changes in flow patterns. Approximately 47 percent of this cost will be related to power consumption.

The project will be paid for with a mixture of loan/grant funding from several agencies. The United States of Department of Agriculture – Rural Development (USDA-RD) has committed

$3,350,000 in funds  Of this total amount, $2,072,000 will be a loan, while the remaining amount ($1,278,000) will be grant funding.  USDA-RD has made the loan portion contingent on the formation of an Assessment District.  The Assessment District  is a tool that guarantees repayment of the loan to the agency.  For the project to receive adequate funding and to go forward,  formation of the District is mandatory. The City contracted with Jerome P. Fournier, Public Finance Consultant and Dick Jacobs Associates, to assist with this process.  The process for the formation of the district took place concurrently with the BECC certification process.  A public meeting with all financial information, including all fees, assessments and related payment was held on June 23, 1999. The received ballots were counted at this meeting.  The property owners approved the formation of the Assessment District by 63% of the votes.

The other expected primary funding source is the North American Development Bank (NADBank), funding from this agency is contingent on the project being certified by the BECC. The NADBank has performed a financial analysis of the City utility.  The findings of this analysis is being used to determine financial eligibility for loan/grant funds from the  NADBank.  It is the intent of the City to secure grant funding from  the NADBank to reduce the total loan amount for the project.  This in turn may reduce the assessment fees levied by the Assessment District.  The NADB prepared a financial analysis and proposed the following financial scheme.

**TABLE ES-2**
**PROPOSED FINANCIAL STRUCTURE**

| Source | Amount (US$) | % of Total Cost |
|---|---|---|
| **Grants** | | |
| USDA | 1,278,000 | 25.6 |
| State | 257,220 | 5.2 |
| BEIF (to cover shortfall) | 1,777,500 | 35.6 |
| **Subtotal** | **3,312,720** | **66.4** |
| **Loans** | | |
| USDA (for new cost) | 1,094,500 | 22.0 |
| USDA (for sunk cost) | 577,000 | 11.6 |
| **Subtotal** | **1,671,500** | **33.6** |
| **TOTAL** | **4,984,720** | **100.0** |

A public participation process was conducted by the City to comply with BECC certification requirements.  The process entailed the development of a plan, the formation of a steering committee, the dissemination of information, and holding of two public meetings.  The first meeting was held on April 22, 1999 and had as an objective presenting to the public the project. The second meeting was held on May 12, 1999 and had as its objective presenting to the public the impact of the proposed project on user fees.

The project complies with the concept of sustainable development as defined by the BECC

criteria: “conservation oriented social and economic development that emphasizes the protection and sustainable use of resources, while addressing both current and future needs, and present and future impacts of human actions,” by providing the necessary wastewater treatment for present and future generations. Additionally, the new plant will improve the quality of the discharge, which eventually flows to the New River and the Salton Sea.

# SECTION 1 - GENERAL PROJECT DESCRIPTION

## A. PROJECT TYPE

Public Sector - Wastewater Treatment Plant Expansion: This project consists of the upgrade and expansion of an existing wastewater treatment plant, which is one of the BECC priority areas.

**Project Title**

Wastewater Treatment Plant Expansion for the City of Westmorland

**Primary Applicant Information**

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- Name of Contact Person: Mr. Joel Hamby – Council Member
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## B. PROJECT LOCATION

Project Location: Westmorland, California, U.S.A
Site Location: Rural Area

**Description of Project Location**

The City of Westmorland, California is located approximately 30 miles from the US/Mexico Border (Exhibit 1.1, General Location Map). The Wastewater Treatment Plant (WWTP) is located within the borders of the City of Westmorland. The new WWTP will be constructed on the location of the existing WWTP (Exhibit 1.2, Street Location Map) located at 5295 Martin Road, Westmorland, California 92281.

The City is a small rural community, primarily residential with some commercial establishments. The area of project impact is primarily agricultural and contained within the existing treatment plant site (Exhibit 3.1, Site Plan)

**Suitability of Proposed Site**

The site of the proposed plant expansion is ideally suited for this purpose. Sufficient space for this plant expansion exists within the boundaries of the existing facility, as noted on the final construction plans (Attachment B, WWTP Improvements: Drawings), to accommodate all of the additional treatment units required. This plant site has been in operation since 1985 and continued utilization of this type will not adversely affect the surrounding area.

## C. PROJECT DESCRIPTION AND WORK TASKS

### 1) Project Description

The proposed project consists of the replacement of the existing WWTP, based on pond system, with an extended aeration oxidation ditch plant. The proposed project will solve the deficiencies at the existing plant and will provide additional treatment capacity to serve the needs of the community through the next twenty years. The most important deficiencies of the existing plant are:

- Seepage of Untreated Wastewater - The six existing ponds seep wastewater though the sides of the berms and bottoms of the ponds violating the National Pollution Discharge Elimination System (NPDES) permit Provision No. 2. This seepage occurs at various locations both above and below the surface of the ground. Signs of leakage on the outside slope face of the berms are clearly evident. Berm height (in relation to the surrounding ground) is approximately 12 feet high. Normal pond operating level is 10 feet. However, due to the leakage, the current operating level is kept to about 5 feet. If the ponds were operated at the 10-foot level, severe leakage would occur and the potential for berm failure and blowout would increase. The California Regional Water Quality Board (CRWQCB) has rendered the berms structurally deficient (Exhibit 2.2, NPDES Permit, page 2, item 7). The amount of seepage has been estimated at 150,000 gpd (the difference between the influent and effluent flow meters).

- Lack of Reliable Influent Pumping Station - Due to age, the existing influent pump station has deteriorated to a point that it is no longer reliable and pumps tend to fail on a regular basis. The existing wet well has severely corroded to a point that it is not practical to salvage. The entire influent pump station and associated force main needs to be replaced to comply with the NPDES Provision No. 5 which has been cited in the TSO (Exhibit 2.1 TSO, page 2, item 10). In addition to replacing the pump station, an emergency generator needs to be installed to ensure reliability of the pump station during power outages.

- Lack of Disinfection Facilities - The current plant does not have disinfection facilities. which are required as part of the NPDES permit.

- Ensure adequate Plant Capacity - The treatment plant has a rated capacity of 375,000 gpd. Currently, the flow into the plant is 300,000 gpd, or about 80 percent of plant's capacity. Within 5 to 10 years it is conceivable that inflows to the plant would be exceeding its capacity if no provisions are taken to serve future capacity needs. In fact, CRWQCB requires the City to submit a plan for expanding the plant when inflow reaches 80 percent of capacity. This project will address City projections and capacity needs for the next 20 years.

The City was issued an "Administrative Civil Liability" (ACL) Order No. 94-093 in 1994 which carried with it a $50,000 penalty (Exhibit 2.3). The ACL specified that the penalty would be suspended if the plant was repaired within a predetermined time schedule. This time schedule was not adhered to due, in part, to the financial limitations of the City. The fine was imposed and the City is paying it off in quarterly installments.

The project described in the following section will correct the above listed deficiencies and remove the City of Westmorland from the non-compliance/imminent health threat situation that it currently faces.

**Proposed Technology**

The proposed project entails the construction of a new WWTP based on an extended aeration oxidation ditch technology. The selection of this technology was based on a facility plan prepared by Dudek & Associates, Inc. in January 1998 (Exhibit 3.2). The facility plan evaluated four alternatives for plant upgrade and expansion, as described later in this section.

The proposed project includes the construction of a new influent pump station, a septage receiving station, an oxidation ditch, two clarifiers, a chlorination channel, return-activated-sludge and waste-activated-sludge (RAS/WAS) pump station, sludge drying beds, and a control building. (Exhibit 3.1, Site Plan).

Since the final engineering is completed the following documents are included for review. These documents will provide the BECC with a complete project description:

- Exhibit 3.3: Wastewater Treatment Plant Improvements; Bidding Requirements, Contract Forms, Conditions of the Contract and Technical Specifications for the project.
- Exhibit 3.4: Wastewater Treatment Plant Improvements; Drawings

## 2) Program of Project Work Tasks

Table 1-1 describes the main work tasks of the project and anticipated times to complete.

**TABLE 1-1**
**PROJECT WORK TASKS**

| Work Task | Time Frame |
|---|---|
| · Complete project engineering | May 1999 |
| · Form the Assessment District | June 1999 |
| · Bid Project | September 1999 |
| **General Miscellaneous items** | |
| · Sludge removal and pond preparation/Site preparation Earthwork | December 1999 |
| · Control building | August 2000 |
| · Generator pad/Standby generator & auto switch gear Electrical and instrumentation | October 2000 |
| · Construction of the septage receiving station | April 2000 |
| · Construction of the sewage grinder station | April 2000 |
| · Construction of the new influent pump station | April 2000 |
| · Construction of the RAS/WAS pump station | September 2000 |
| · Construction of the oxidation ditch | July 2000 |
| · Construction of two clarifiers | September 2000 |
| · Construction of the chlorination channel | October 2000 |
| · Construction of sludge drying beds | November 2000 |

## 3) Description of the Community

### Demographic Information

The California Department of Finance, Demographic Research Unit, estimated the population of the City of Westmorland at 1,713 on January 1, 1997. This estimate is considered the official State estimate. The State also estimated the total housing units at 507 and the single detached housing units at 380 or 75% of the total.

However, the Imperial County Community Economic Development Agency (ICCED) recently estimated the population at 2,300**.** They also projected that the future population in the year 2015 will be 4,200. This is a population growth of 83% in 18 years. Applying this growth rate to the State estimate results in a population of 3,130 by the year 2015. Thus, current population estimates vary from 1,713 to 2,300; while population projections for the year 2015 range from 3,130 to 4,200.

In June, 1997 the State Department of Finance reviewed growth rates in various areas of the State. Population in Imperial County increased only by 0.9 % from January , 1996 to January 1997. This was in contrast to the growth rate of 4.1 percent observed from 1994 to 1995, and the 3.4 percent experienced from 1995 to 1996. It is estimated that the City of Westmorland itself grew 1.8 percent between 1996 and 1997.

Therefore, it appears that ICCED's growth projections are high. However, given the disparity in the population estimates, the 2015 population projection is most likely between 3,130 and 4,200, or by taking average, about 3,665. The facility plan used this population projection as the ultimate project population, which was used to estimate future wastewater flows, as described below.

It is important to note that although this population projection corresponds to the year 2015 (18 years after the development of the facility plan), they were used as the ultimate (i.e. 20-year) population. As explained in the following section, this assumption will not significantly affect the ultimate wastewater flow projection, as many assumptions are made throughout the study, not only in terms of future population growth rates, but also in regard to water conservation measures, etc.

### Current Wastewater Flow

A new influent meter was installed at the wastewater treatment plant in May, 1997. This meter indicates that the current wastewater flow to the plant is about 300,000 gallons per day (gpd). In addition to the wastewater flow, septage is hauled to the plant. The County of Imperial encourages the City to accept septage from pumpers for obvious environmental reasons. The average daily quantity of septage is estimated at 1,300 gpd.

The unit wastewater flow rates are 175 gallons per day per capita (gpdc) if the population

estimate of 1,713 is used, or130 gpdc for the population estimate of 2,300 persons.

Westmorland does not have any substantial industrial or commercial enterprises that produce large quantities of wastewater. Business activities in the community are smaller stores and offices.

**Projected Wastewater Flow**

Domestic water use in Imperial County is high. The current typical maximum day per capita water use in the region is estimated to be in the range of 300 to 400 gallons per day. It is expected that the per capita water use will drop when water meters are installed in the distribution system and the water users are required to pay for the water used instead of paying a flat rate for unlimited service.

Current water demands in the Imperial County region are much higher than those in most parts of Southern California. For example, typical maximum daily per capita water demands in the adjacent County of San Diego are estimated to be 175 gallons per day. This difference in water use is due to the temperature variations, lack of rainfall (average 1.5 inches/year) and the lower cost of water in the Imperial County region. Nonetheless, with the proposed water supply system improvements, the cost of water will increase and the per capita water demand is projected to decrease.

Typically, about a half of the residential water usage is inside the home and it is this water usage that produces the wastewater flow. The other half of usage is outside the home for irrigation, car washing, swimming pool make-up water and similar activities. Exterior water usage is probably a higher percentage of the water usage in Westmorland due to the warm climate and the large percentage of single detached homes with landscaping. Therefore, current wastewater flows of 130 to 175 gallons per day per capita are in line with the water usage of 300 to 400 gpdc.

Projection of wastewater flows for Westmorland should take into account variations in water consumption that would result from probable metering of domestic water services in the future. This should substantially decrease the excessive use of water. Interior water use will decrease when there is an economic incentive to repair leaking plumbing fixtures, install low flow devices and use water only when necessary.

As a result of the different estimates of population growth and the impact of metering and other water conservation measures, several wastewater flow projections were developed in the facility plan. Table 1-2 depicts flow projections resulting from two population estimates and two water consumption rates.

**TABLE 1-2**
**POPULATION AND FLOW PROJECTIONS**

| POPULATION ESTIMATES | *FLOW PER CAPITA (gpd) | 20 YEAR POPULATION PROJECTION | 20 YEAR FLOW PROJECTION |
|---|---|---|---|
| 2,300 | 130<br>**100 | 4,200<br>4,200 | 546,000<br>420,000 |
| 1,713 | 175<br>130 | 3,130<br>3,130 | 548,000<br>407,000 |
| AVERAGE<br>2,006 | 150<br>**112 | 3,665<br>3,665 | 549,750<br>410,000 |

* Based on 300,000 gpd inflow to the plant
** Flow reduction of 25 percent with installation of water meters

**Design Flow**

As Table 1-2 shows, there is a number of variations in design flow that can occur given the variations in populations and water consumption rates. The existing inflow to the plant of 300,000 gpd is the most critical number to be concerned with and unless something totally unanticipated occurs, the area will grow and the plant will need capacity in excess of this amount. The highest flow projection under the three scenarios is 550,000 gpd. This number is derived from two main factors; an aggressive population growth rate (83% percent in 18 years) and the current per capita water consumption or wastewater flow. The low flow projection of 407,000 gpd is derived from an assumption that sewage flow will be reduced after water meters are installed.

An intermediate value of 500,000 gpcd was recommended in the facility plan. It was assumed that designing for the lowest estimates would not provide enough conservatism, thus the recommended flow tends to be towards the upper end of the range.

**Minority Population**

The population of the City of Westmorland is, according to the 1990 census, 85 percent Hispanic. The remaining 15 percent is divided among Asian, Black and Caucasian ethnic groups. There is no discernable housing pattern for the different groups and the plant will serve all areas.

**Water Quality Management**

The City of Westmorland does not have a formal water quality management plan at present. Although the WWTP has some problems, it has been able to meet discharge requirements with the exception of items noted on Time Schedule Order No. 97-110 (Exhibit 2.1, TSO). However, this project will enhance the quality of effluent far above the present requirements thereby significantly reducing the pollution being discharged into the New River and the Salton Sea.

**Local Environmental Services**

Presently, 100 percent of the residents within the City are connected to the Westmorland wastewater system. There are no other wastewater treatment facilities available to Westmorland residents. The WWTP does not serve connections outside of the City boundary. The septage that is received from pumping trucks is provided as a service so that pumpers can comply with EPA/CRWQCB regulations and helps offset the costs associated with operating and maintaining the WWTP. Similarly, water service is provided by the City to 100 percent of the residents.

The City provides these services on a continuous daily basis, with interruptions only occurring in the event of an emergency or for pre-arranged shutdowns for system/plant maintenance.

- **Project Alternatives**

The alternatives for wastewater treatment processes considered in the facility plan are limited to those processes that are appropriate for small communities. Both repairs and upgrades have been considered.

Much of the work presented in the facility plan came from previous reports and studies prepared by Black and Veatch (Exhibit 3.6, B&V WWTP Improvements) and the Value Engineering (VE) report prepared by Dudek and Associates (Exhibit 3.7, Value Engineering). Because these reports had already analyzed various alternatives, the facility plan did not re-evaluate them, but tried to improve on them.

The facilities plan did not lend itself to an evaluation of numerous alternative approaches to repairing the facility. The extent of the repairs and upgrades required to the existing pond system in order for it to comply with the NPDES permit, coupled with capacity issues, made for evaluation of the other treatment systems more appropriate. Therefore, mechanical treatment systems using suspended and attached growth were considered.

The alternatives described below were examined in regards to their financial, social and environmental aspects. An alternative was recommended based on this analysis.

All alternatives were evaluated using the design criteria presented in Table 1-3.

**TABLE 1-3**
**DESIGN CRITERIA FOR THE EVALUATION OF ALTERNATIVES**

| | |
|---|---|
| Current average daily flow | 300,000 gpd |
| Design average daily flow | 500,000 gpd |
| Biochemical oxygen demand | 215 mg/l |
| Suspended Solids | 256 mg/l |
| Septage intake average | 5,000 gpd |
| Effluent Requirements<br>BOD<br>SS | <br>30 mg/l<br>30 mg/l |

**<u>Alternative No. 1</u> – Repair existing pond system**

This alternative consists of the upgrade and rehabilitation of the existing pond system. A new treatment train consisting of one aeration pond and two stabilization ponds would be constructed. Additionally, the existing ponds would be rehabilitated by the installation of a synthetic impermeable liner.

Under this alternative, the project would be divided in two phases of implementation. During the first phase, the new train and a rehabilitated train would be in service, providing a total treatment capacity of 400,000 gpd. The remaining existing train would be out of service. During the second phase of the project, the second existing train would also be rehabilitated and put in service, resulting in a capacity of 600,000 gpcd.

The rehabilitated plant would also be upgraded to include disinfection facilities, a new influent pumping station, a new control building , a septage receiving station, and flow control device, yard piping, and electrical services.

The advantages of a pond system include the following:

- Minimum operational skills required
- Low capital cost requirements, if land does not need to be purchased or extensive earthwork provided
- Many means of upgrading available, minimizing capital outlays where lagoons already exist
- Sludge disposal required only at intervals of several years

Disadvantages of this technology include:

- Large land area requirements
- Continuous flow (traditional) facultative ponds cannot meet stringent effluent standards during warm seasons without upgrading
- Lagoons can negatively impact ground water if an inadequate liner is installed or if an existing liner is damaged
- Most lagoons discharge to smaller, water-quality-limited streams and may, therefore, require upgrading
- Fails to address structural integrity problem
- Difficult to conduct a sequencing of construction

The capital cost of this alternative was estimated at $3,096,365, although one bid was received for $5.1 million in early 1997. The annual O&M cost was estimated at $145,000. The present worth costs amortized for 20 years was calculated at $4,626,000.

**Alternative No. 2 – Modified Black & Veatch design for pond system**

Black and Veatch presented this alternative on May 20, 1997 as a variation of alternative No. 1. Similar to alternative No. 1, alternative No. 2 consists of constructing a new pond train and rehabilitating the existing ponds. However, the aeration ponds would be divided into two cells and only one stabilization pond would follow the two cells of the aeration basin. The first cell of the stabilization pond would be completely mixed, while the second phase would be an aerated facultative pond.

The total volume of the ponds would be less than one half of the volume of the original design, thus reducing the capital cost of the project. On the other hand, aeration horsepower would be increased by 50 percent.

The advantages and disadvantages of this alternative are identical to those identified for alternative No. 1, although two important additional disadvantages were identified: eliminating one settling pond could compromise the quality of the effluent, and energy consumption would be higher. The only significant advantage of this alternative is its lower capital cost when compared to alternative No. 1.

The capital cost of this alternative was estimated at $2.8 million, while the annual O&M cost was estimated at $165,000. The present worth cost amortized for 20 years was calculated at $4,531,000.

**Alternative No. 3 – Constructing a new oxidation ditch**

Alternative No. 3 consists of eliminating the existing pond system and constructing a new oxidation ditch followed by secondary clarification and disinfection. Sludge settled in the clarifier would be pumped to the drying beds. The upgraded plant would include refurbishing the existing influent pump station to include a comminutor, adding a new influent pump station, a new septage receiving station, and a control building.

It is important to point out that the oxidation ditch does not require primary clarification, although a comminutor is necessary. By not having a primary clarifier, the capital and O&M costs of the plant are significantly reduced. Furthermore, primary clarifiers tend to create odor problems and to increase the complexity of the sludge handling operation, and for that matter of the whole plant.

The oxidation ditch is capable of reliably producing a very high-quality effluent. Additionally, it is capable of nitrogen removal if some relatively minor improvements and modifications in the mode of operation are undertaken.

Key advantages of the oxidation ditch process include:

- Low sludge production
- Excellent performance
- High reliability
- Nitrogen removal likely
- Relatively low initial cost
- Can be designed for biological phosphorus and nitrogen removal

Key disadvantages of this process include:

- Relatively high maintenance requirements for aerators
- Potential for rising sludge due to denitrification in final clarifier
- Requires a trained operator and routine monitoring

Alternative No. 3 represents the most cost-effective alternative, with the exception of the no-project alternative, while it would produce the highest effluent quality of all alternatives. The estimated capital cost of this alternative was originally estimated at $3.0 million, with an annual O&M cost of $140,000, resulting in a present worth cost of $4,469,000. Nonetheless, more recent estimates place the construction cost at #3.2 million.

**<u>Alternative No. 4</u> – Construction of a trickling filter**

Alternative No. 4 would provide secondary treatment by means of a mechanical process, similar to that utilized in alternative No. 3. This alternative entails the construction of a biological trickling filter preceded by primary sedimentation and followed by secondary clarification and disinfection. Similar to the previous alternative, the project would also include a new pump station, sludge drying beds, and a control building.

Removal of organic matter in the filter is achieved through the metabolism of organisms attached to the filter media, which can be either rock or synthetic material. Trickling filters provide good quality effluent, although they are limited in some instances for meeting secondary-level effluent (i.e. BOD/TSS = 30 mg/L). Another major disadvantage of trickling filters when compared to an

oxidation ditch is that they require primary sedimentation, which would increase the cost of the project and its operational complexity. Furthermore, primary sedimentation tends to cause nuisance odors.

The most important advantages of the trickling filter process include:

- Applicable for new facilities or upgrading existing trickling filter plants
- Capable of consistently achieving very high-quality effluent (<20 mg/L BOD & SS)
- Relatively simple process
- Low cost and reliable upgrading technique for trickling filters
- Can be designed to provide denitrification

Key disadvantages of this process include:

- Primary clarification required
- Pumping required to douse trickling filter
- Potential for nuisance odors from primary clarifiers, trickling filter, sludge handling
- Moderate O&M requirements; trained operator necessary

For the case of Westmorland, the trickling filter alternative presented yet another important disadvantage: this alternative represents the least cost-effective alternative. The capital cost of the new plant was estimated at $3.2 million, while its annual O&M cost is expected to reach $168,000, resulting in a present value cost of $4,963,000.

In addition to the four alternatives previously described, the following alternatives were considered but not evaluated:

**Alternative No. 5 – No Project Alternative** – The no project alternative is not feasible at Westmorland. The structural condition of the existing berms is deficient and a high percentage of the wastewater leaks out through the ponds. The rated capacity of the ponds is too low for future growth and this is decreased further by the need to decrease the pond depth because of the poor conditions of the embankments. The existing plant does not meet waste permit requirements.

**Alternative No. 6 – Evaporation Pond System Alternative** – It has also been suggested that zero discharge evaporation pond system is considered in this area with high temperatures and low rainfall. The average annual rainfall is about 2.0 inches and the evaporation rate is about 100 inches. This is a net evaporation rate of about 8 feet per year. The current wastewater flow of 300,000gpd is an annual amount of 336 ac-ft/yr. To evaporate this amount would require 42 acres of pond water surface. For a flow of 500,000 gpd, the water surface would be 70 acres. The present six ponds treatment system is contained within a fenced area of 385 feet by 870 feet, or 7.7 acres. Only a portion of the fenced area is water surface. Therefore it is not reasonable to further consider this alternative which would require the purchase of land greater than 10 times

the present plant site.

**Sludge Handling Alternatives**

In addition to the "liquid" treatment alternatives, several alternatives were evaluated for sludge handling for the two mechanical systems (i.e. trickling filter and oxidation ditch). Treatment and disposal of sludge generated from the mechanical treatment of wastewater is a major requirement facing small communities. Sludge handling can account for 50 percent of the cost of operating a wastewater treatment plant. Many sanitary landfills refuse or are reluctant to accept sewage sludge, and suitable areas for land spreading of stabilized sludge are becoming difficult to find in some urbanized areas of the country. The following alternatives were considered for sludge handling: holding tanks, dewatering beds, and sludge conditioning (both aerobic and anaerobic). Dewatering beds were selected as the most appropriate alternative.

**Cost comparison of alternatives**

In order to select the most appropriate alternative for Westmorland, the alternatives were compared both in their cost (see Table 1-4) and in terms of other less quantifiable advantages and disadvantages. Table 1-5 provides a comparison of the alternatives for several criteria.

**TABLE 1-4**
**COST COMPARISON OF ALTERNATIVES**

| | ALTERNATIVES | | | |
|---|---|---|---|---|
| | Original Pond #1 | Completely Mixed Pond #2 | Oxidation Ditch #3 | Trickling Filter #4 |
| CONSTRUCTION COSTS (Engineer's Estimate) | *3,100,000 | $2,800,000 | **$3,100,000 | $3,200,000 |
| O&M COST (Present Worth) | $108,400 | $128,000 | $140,000 | $168,000 |
| **Pond Sludge Removal** | $ 37,000 | $ 37,000 | _____ | _____ |
| **SUBTOTAL** | **$145,400** | **$165,000** | | |
| Present Worth O&M Factor | $1,526,000 | $1,731,000 | $1,489,000 | $1,763,000 |
| **PRESENT WORTH TOTAL** | **$4,626,000** | **$4,531,000** | **$4,589,000** | **$4,963,000** |

*Actual bid was $5.1 million
**New estimate at $3.2 million

For the ranking of alternatives, a value of 1 to 4 was assigned to each alternative, where 4 represented the most advantageous alternative.

**TABLE 1-5**
**RANKING AND SELECTION OF ALTERNATIVES**

| **DESCRIPTION** | **Alt. 1** | **Alt.2** | **Alt.3** | **Alt.4** |
|---|---|---|---|---|
| 1. Cost Effectiveness | 1 | 4 | 3 | 2 |
| 2. Environmental Considerations | 1 | 2 | 4 | 3 |
| 3. Effluent quality | 2 | 1 | 4 | 3 |
| 4. Best Use of Existing Site | 1 | 3 | 4 | 2 |
| 5. Future Expandability | 1 | 2 | 4 | 3 |

| DESCRIPTION | Alt. 1 | Alt.2 | Alt.3 | Alt.4 |
|---|---|---|---|---|
| 6. Meet Stricter EPA Requirements | 2 | 1 | 4 | 3 |
| 7. Minimal Interruption of Existing Operation | 4 | 1 | 2 | 3 |
| 8. Constructability & Contractor Risk Reduction | 1 | 2 | 4 | 3 |
| 9. O&M – Ease of Operations | 3 | 4 | 2 | 1 |
| 10. Public Acceptance | 2 | 1 | 4 | 3 |
| **TOTALS** | **18** | **21** | **35** | **26** |

- Highest is Most Desirable (4 – High, 1 – Low)

An overall summary of the findings includes the following key observations.

Alternative No. 1 – Fails to address the structural integrity of the existing earth berms and sludge removal quantity. Requires additional land purchase. Difficult construction sequencing and operation coordination.

Alternative No. 2 – Same concerns as No. 1. Eliminating one settling pond per train jeopardizes future effluent quality.

Alternative No. 3 – Most cost effective. Best use of existing site. Advantages relating to construction sequencing, operations, expandability, and effluent quality. Higher operation cost due to aeration (power) requirements.

Alternative No. 4 – Not cost effective.

Based on this analysis, it has been determined that Alternative No. 3 will be the selected alternative for this project.

**5) Project Justification**

The primary objective of this project is to address the environmental and public health issues that the citizens of Westmorland face. The failing wastewater facility located within the city limits that apparently discharges/leaches untreated wastewater into the ground is unacceptable. It poses a significant threat to the citizens of Westmorland as well as the environment, including the groundwater supply.

The community cannot delay this project without further risk of penalty.

The City of Westmorland will potentially face additional penalties from the CRWQCB if the Time

Schedule Order is not adhered to. Immediate action is needed to correct these issues and prevent further regulatory actions.

In summary the new wastewater plant is necessary to correct the following deficiencies:

- Seepage of untreated wastewater
- Lack of reliable influent pump station
- Lack of disinfection facilities
- Lack of adequate capacity
- Non-compliance issues
- Health threat issues

The proposed extended aeration oxidation ditch plant is the best solution to the above deficiencies both on an environmental/public health basis and cost-effective basis. *Refer to 'Project Alternatives' within this application for a complete analysis*.

### d. CONFORMANCE WITH INTERNATIONAL TREATIES AND AGREEMENTS

This project conforms to all international treaties and agreements. Furthermore, there will be no transboundary effects from this project, as all discharges will be maintained completely within U.S. territory.

# SECTION 2 - HUMAN HEALTH AND ENVIRONMENT

## a. HUMAN HEALTH AND ENVIRONMENTAL NEED

The existing wastewater treatment plant deficiencies are numerous and are documented in . Exhibit 2.1, Time Schedule Order and Exhibit 2.2, NPDES Permit.

These problems include:

- Seepage of Untreated Wastewater - The six existing ponds seep wastewater though the sides of the berms and bottoms of the ponds violating the National Pollution Discharge Elimination System (NPDES) permit Provision No. 2. This seepage occurs at various locations, both above and below the surface of the ground. Signs of leakage on the outside slope face of the berms are clearly evident. Berm height (relative to the surrounding ground) is approximately 12 feet. Normal pond operating level is 10 feet. However, due to the leakage, the current operating level is kept to about 5 feet. If the ponds were operated at the 10-foot level, severe leakage would occur and the potential for berm failure and blowout would increase. The California Regional Water Quality Board (CRWQCB) has rendered the berms structurally deficient (Exhibit 2.2, NPDES Permit, page 2, item 7). The amount of seepage has been estimated at 150,000 gpd (the difference between the influent and effluent flow meters).

- Lack of Reliable Influent Pumping Station - Due to age, the existing influent pump station has deteriorated to a point that it is no longer reliable and pumps tend to fail on a regular basis. The existing wet well has severely corroded to a point that it is not practical to salvage. The entire influent pump station and associated force main need to be replaced to comply with the NPDES Provision No. 5 which has been cited in the TSO (Exhibit 2.1 TSO, page 2, item 10). In addition to replacing the pump station, an emergency generator needs to be installed to ensure reliability of the pump station during power outages.

- Lack of Disinfection Facilities - The current plant does not have disinfection facilities, which are required as part of the NPDES permit.

- Ensure adequate Plant Capacity - The treatment plant has a rated capacity of 375,000 gpd. Currently, the flow into the plant is 300,000 gpd, or about 80 percent of plant's capacity. Within 5 to 10 years it is conceivable that inflows to the plant would be exceeding its capacity if no provisions are taken to serve future capacity needs. In fact, CRWQCB requires the City to submit a plan for expanding the plant when inflow reaches 80 percent of capacity. This project will address City projections and capacity needs for the next 20 years.

Suffice it to summarize that the existing plant poses some threats to the environment and public health due to the seepage of untreated wastewater through the lagoon berms. Seepage water can

either reach the drain or create puddles inside the treatment plant. The structural condition of the berms is only expected to deteriorate further in the future. As stated, the plant does not have disinfection facilities, thus creating a public health hazard by discharging effluent with high concentrations of coliform and other pathogens to the drain. Lastly, the plant does not have enough capacity to handle future flows, especially considering that the ponds cannot be operated at their maximum capacity as a result of the poor structural conditions of the berms.

In addition the City has been issued an "Administrative Civil Liability" (ACL) Order No. 94-093 in 1994 which carried with it a $50,000 penalty. The ACL specified that the penalty would be suspended if the plant were repaired within a predetermined time schedule. This time schedule has not been adhered to due, in part, to the financial limitations of the City. The fine was imposed and the City is paying it off in quarterly installments.

To avoid further penalties the City must now adhere to Time Schedule Order (TSO) No. 97110. The schedule is described in the following table.

**TABLE 2-1**
**TSO NO. 97110 DESCRIPTION**

| Task | Completion Date | Task Description |
|---|---|---|
| 1. | December 1, 1998 | Secure Financing for Upgrading WWTP |
| 2. | September 1, 1999 | Start Construction for Upgrading the Facility |
| 3. | December 1, 2000 | Complete Construction |
| 4. | February 1, 2001 | Complete Start –up of Upgraded facility |

It is apparent that time is of the essence to protect the environment, public health, as well as to avoid additional penalties due to lack of compliance.

The following table specifies the NPDES effluent limitations to Trifolium Drain #6 for the existing plant. This permit expires on January 8, 2003. The existing limitations will apply to the new proposed WWTP.

**TABLE 2-2**
**EFFLUENT LIMITATIONS**

| | | 30- Day Arithmetic Mean | 6 – Day Arithmetic Mean | |
|---|---|---|---|---|
| Constituent | Unit | Discharge Rate[3] | Discharge Rate[4] | Daily Maximum |
| $20^0$ C $BOD_5$ | mg/l[5] | 45 | 65 | -- |
| Total Suspended Solids | mg/l | 95 | -- | -- |
| Settleable Matter | mg/l[6] | 0.3 | 0.5 | -- |
| Flow | MGD[7] | -- | -- | 0.375 |
| | | | | |

[3] 30 – Day Mean – The arithmetic mean of pollutant parameter values of samples collected in a period of 30 consecutive days.
[4] 7 – Day Mean – The arithmetic mean of pollutant parameter values of samples collected in a period of 7 consecutive days.
[5] mg/l – milligrams per Liter
[6] ml/l – milliliters per Liter
[7] MGD - Million Gallons – per – Day

The contact agency is:

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California Regional Water Control Board
Colorado River Basin Region
73-720 Fred Waring, Suite 100
Palm Desert, CA 92260
Phone: (760) 346-7491
Facsimile: (760) 341-6820

The WWTP effluent quality will improve with the use of the proposed technology (oxidation ditch) by significantly reducing BOD and suspended solids, assuring compliance with the NPDES discharge limitations. The new chlorination channel will address NPDES permit requirements and reduce the levels of fecal coliform and virus discharged into Trifolium #6 which feeds into the New River terminating at the Salton Sea. Public health will be protected, as well as wildlife that inhabit local waterways.

In summary the proposed WWTP plant will provide a high level of environmental protection, protect the public health, stop further penalties/ fines from being administered by the CRWQCB

for lack of compliance, and the City will be in compliance with The Water Quality Control Plan for the Colorado River Region of California (Basin Plan) which designates the beneficial uses of ground and surface waters.

## b. ENVIRONMENTAL ASSESSMENT

The project must comply with all environmental requirements both at the state and federal level. The results of the state required California Environmental Quality Act (CEQA) and the federally required National Environmental Protection Act (NEPA) are detailed below.

All environmental documentation to comply with the California Environmental Quality Act (CEQA) has been prepared in the form of a Negative Declaration (Exhibit 2.4, Negative Declaration). The Negative Declaration satisfies the requirements of CEQA, PRC 21000 et. seq. Cal Code Reg. 15000 et. seq.). The determination that the proposed project will not have a significant adverse effect on the environment is based on the Initial Study/Environmental Checklist (Exhibit 2.4, Negative Declaration, Section 4,) and the Environmental Discussion (Exhibit 2.4, Negative Declaration, Section 5). The document was signed by Mr. Joel Hamby, Public Works Commissioner in April, 1998.

The National Environmental Protection Act (NEPA) requires that an Environmental Assessment (EA) be completed and that a Finding of No Significant Impact (FONSI) be determined or that any negative environmental issues be mitigated. A supplemental assessment was necessary since the project technology changed significantly after the original environmental assessment was done in March, 1995. It should be noted that attachments A and B refer to the expansion of the plant 300 feet to the north. This is no longer the case, these documents were prepared in 1994 when the intention was to rehabilitate and expand the existing pond system. The current design will be constructed within the existing plant boundaries, limiting to an even greater degree any adverse impact to the surrounding environment.

The necessary supplemental Environmental Assessment, was completed early in May, 1999 with the appropriate signatures from Mr. Jeff Hays, United States Dept. of Agriculture- Rural Development (USDA-RD) and Mr. Carlos Quintero, United States Environmental Protection agency (USEPA). This document can be found in Exhibit 2.5, titled: NEPA FONSI.

After review of the adopted and supplemental environmental assessments, USEPA and USDA – RD have determined that the proposed project will not have a significant adverse impact on the environment and that an environmental impact statement will, therefore, not be prepared. Moreover, the proposed system will significantly improve the treatment process and hence the quality of treated water.

The supplementary environmental assessment was open for public inspection and comment for 30 days beginning May 6$^{th}$ and ending on June 4$^{th}$, 1999.

### Transboundary Aspects

The project will not have any know negative transboundary environmental effects. The proposed WWTP will continue to discharge plant effluent, as it presently does, into Trifolium #6, which feeds into the New River, exclusively within U.S. territory. As noted previously, the quality of the effluent from the new plant will greatly enhance the current effluent quality by reducing BOD, suspended solids and providing disinfection through chlorination. The impact on the New River will be an overall improvement to the quality of water.

### c. COMPLIANCE WITH APPLICABLE ENVIRONMENTAL AND CULTURAL RESOURCE LAWS AND REGULATIONS

This project complies with all local, state and federal environmental, cultural, archeological, ethnic and historical laws and regulations. As part of the Final Mitigated Negative Declaration, a Biological Resources Determination and a Cultural Resources Survey were conducted to ensure that the proposed project does not have significant impacts on these types of resources.

The Biological Resources Determination (Exhibit 5.1, Negative Declaration, attachment A) was prepared by Mr. G.T. Baird, Biologist, Brian F. Mooney and Associates. The site was surveyed on October 18, 1994 to identify any biological resources that may be affected by the proposed project. No native plants were observed by the surveyors. The presence of the sensitive burrowing owl (*Athene cunicularia*), which is a State and Federal Species of Concern, was also not detected. The determination is that there will be no adverse impact on biological resources.

Mr. John R. Cook, S.O.P.A., Brian F. Mooney and Associates prepared the Cultural Resources Survey (Exhibit 5.1, Negative Declaration, attachment B,). The cultural Resources evaluation consisted of both a records search and an on-foot survey of the project area on October 13, 1994. No cultural resources were identified. The record search was conducted by the Imperial Valley College Desert Museum. The determination is that there will be no impacts to cultural resources.

# SECTION 3 - TECHNICAL FEASIBILITY

## a. APPROPRIATE TECHNOLOGY

The proposed technology has been widely used in the U.S. and is well recognized and proven. Based on the alternative evaluation and selection process presented in Section 2, this alternative is the most appropriate one for the characteristics of Westmorland. While the new plant will provide a better quality effluent than the existing plant, the operational and maintenance requirements of the new plant will be greater. An oxidation ditch is a relatively simple technology, although more complex than the existing pond system. Additionally, new O&M requirements will arise from the new disinfection and sludge handling facilities.

Since plant influent will consist primarily of residential discharges, with a minimal amount of commercial discharge, no significant impacts can be expected from toxic discharges that may affect the performance of the plant. However, pretreatment will be required at commercial locations when appropriate. The plant effluent will consistently meet or surpass NPDES Permit requirements.

The City has successfully operated and maintained both a water and wastewater facility using existing staff for the past 15 years. The O&M staff have demonstrated they possess the appropriate technical skills to operate treatment plants. Any additional training needed to operate the new plant will be provided prior to and during plant start-up. The City will always maintain operators with the proper level of certification to ensure the plant is operated in an efficient, cost-effective manner, providing maximum facility life and a high degree of protection to the environment.

Operation and maintenance of this facility will be supervised and performed by a Grade II Wastewater Treatment Plant Operator certified by the State Water Resources Control Board. On-going operator training will be mandatory for personnel operating the WWTP.

### 1) Project Specifications

The selected alternative consists of the replacement of the existing WWTP, based on a pond systems, with an extended aeration oxidation ditch plant. As previously indicated, the proposed project consists of the following elements:

- A septage receiving station
- A comminutor located at the existing influent pump station
- A new pump station
- Flow meters
- An oxidation ditch
- A return activated sludge/waste activated sludge (RAS/WAS) pump station

- Two secondary clarifiers
- A flow splitter vault
- A chlorination channel
- Three sludge drying beds
- A control building.

The septage receiving station is expected to receive approximately 1,300 gpd with a peaking factor of 3.0. The station consists of a fenced drive-through area where septage trucks can discharge their wastes without entering the treatment plant. The existing influent pump station will be refurbished by removing the pumps and installing a comminutor in the wet well to grind solids for protection of the new centrifugal pumps. The new pump station has a design flow of 1,050 gpm. The peak factor is 3.0. Three pumps will be incorporated into the wet well and the shut off valves and check valves will be enclosed in a concrete vault approximately 5 feet below grade. Discharge from the pump station will be to the oxidation ditch.

The proposed design of the oxidation ditch is for a future flow of 500,000 gpd. The oxidation ditch is the aeration basin and here the waste is mixed with active micro-organisms. The mixed liquor flow is split in a flow splitter box and sent to the final clarifiers for separation. The two clarifiers will operate in parallel. Clarified liquid passes over the effluent weir and settled sludge is removed from the bottom of the clarifier by a pump and is returned to the ditch. Return-activated-sludge and waste-activated-sludge is pumped from the clarifier to the sludge drying beds by the RAS/WAS pump station. Sludge from the clarifier must be dewatered prior to disposal in landfills. The sludge is pumped to the sludge drying beds in 8 to 12 inch layers and allowed to drain and then air dry.

In the chlorination channel, disinfection is used to destroy the pathogenic agents in the waste stream. The chlorination system uses chlorine gas stored in 150 lb cylinders. The objective of the chlorination system is to maintain a 1.0 mg/l combined chlorine residual after 30 minutes of contact time. Discharge of the effluent is to the IID Trifolium Drain No. 6.

The control building will house the motor control center, the main service center, chemical metering pumps, chlorine analyzer, and provide office space for the operator. Simple wastewater tests such as sludge volume index and dissolved oxygen, can be performed in the laboratory area. The anticipated size of the building is approximately 12 feet by 20 feet.

The daily average flow capacity of the plant will be 500,000 gpd, based on a 20-year design flow, as described in Section 2 – Wastewater flow projections. It is important to note that the plant will have a peaking factor of 3.0.

The main characteristics of the components of the new plant are described in Table 3-1.

**TABLE 3-1**
**MAIN CHARACTERISTICS OF PLANT COMPONENTS**

| Plant Component | Characteristics |
|---|---|
| Comminutor | ▪ Located at existing pump station location<br>▪ Design flow of 1,050 gpd<br>▪ Muffin Monster 30000-018<br>▪ Gravity flow to new pump station |
| New pump station | ▪ Design flow of 1,050 gpd<br>▪ Three pumps in lead/lag/standby mode (15 HP)<br>▪ Dimensions: 5' X 16' X 18'<br>▪ Expandable to 4 pumps |
| Septage receiving station | ▪ Will receive 1,300 gpd of septage<br>▪ Fenced drive-through<br>▪ Quick-disconnect hose clamp for discharge<br>▪ Hose bib for truck washing<br>▪ Discharge will flow to pump station<br>▪ Muffin Monster 30000-004 comminutor<br>▪ Pump (1 HP)<br>▪ Record keeping and sampling will be implemented |
| Oxidation ditch | ▪ Initial flow of 375,000 gpd, expandable to 500,000 gpd<br>▪ Influent BOD of 146 mg/L; Total suspended solids of 106 mg/L<br>▪ 214' length X 24' width<br>▪ Two 12-foot brush rotors (third one for ultimate flow)<br>▪ Water depth is 5.5'<br>▪ Rotor speed is 90 rpm (25 HP)<br>▪ 24-hour hydraulic retention time |
| Clarifiers | ▪ Two clarifiers<br>▪ 28-foot diameter; 9-foot depth<br>▪ Reinforced concrete<br>▪ Loading rate of 400 gpd/ft2<br>▪ 4 hour detention time |
| RAS/WAS pump station | ▪ Three RAS pumps (two operational at any time)<br>▪ Two WAS pumps<br>▪ Non-clog horizontal centrifugal pumps<br>▪ Magnetic flow meters |
| Chlorination system | ▪ Designed for 500,000 gpd with a 1 mg/L chlorine residual<br>▪ Sodium hypochloride added prior to entrance to channel and mixed at pump<br>▪ Chlorine demand is 25 lbs/day<br>▪ Liquid sodium hypochloride stored in 500-gal tank<br>▪ Sodium bisulfate added prior to discharge for dechlorination |

| Plant Component | Characteristics |
|---|---|
| Sludge drying beds | ▪ Incoming sludge at approx. 2% solids<br>▪ 8-12-inch layers<br>▪ 10-15 days of drying<br>▪ Three beds (1 as standby)<br>▪ 25 X 50 feet<br>▪ Concrete-lined |
| Control building | ▪ Motor control center<br>▪ Main service center<br>▪ Chemical metering pumps<br>▪ Chlorine analyzer<br>▪ Office space<br>▪ Small basic laboratory space (sludge volume index and dissolved oxygen analysis) |

This project excludes any upgrades or modifications to the collection system. There are no known problems with inflow, infiltration or any component within the collection system. The same qualified staff that will operate the new WWTP maintains the system. The collection system is a gravity feed system with no lift stations.

This extended aeration oxidation ditch plant is the most affordable project alternative that will meet the City's present and future needs. Detailed technical information can be found in Exhibit 3.3 - Bidding Requirements and Technical Specifications, and Exhibit 3.4 - Wastewater Treatment Plant Plans.

**2) Technical Process**

As described in Section 2, four treatment alternatives were evaluated. Additionally, two other alternatives were considered but not evaluated in detail since they were deemed unfeasible after a brief review. These two alternatives were the no-project alternative and the construction of zero-discharge evaporative ponds.

The four evaluated alternatives included both rehabilitation and upgrading of the existing pond system and the construction of a new mechanized plant. The four alternatives evaluated were:

Alternative No. 1 - Repair existing ponds and construction of new treatment train
Alternative No. 2 - Modified pond system
Alternative No. 3 - Oxidation ditch
Alternative No. 4 - Trickling filter

Selection criteria for the alternatives incorporated parameters that included cost effectiveness; environmental considerations; effluent quality; best use of existing site and future expandability; the ability to meet stricter EPA requirements; minimal interruption of the existing operation;

constructablility and contractor risk reduction; ease of operation; and public acceptance. In comparison to the other alternatives, the selected alternative ranked most cost effective, and makes best use of the existing site. In addition, the selected alternative ranks highest in areas relating to construction sequencing, operations, expandability, and effluent quality.

The capital and O&M cost of each alternative, as well as other important advantages and disadvantages of each alternative were discussed in the facility plan document, as explained in section 2. Alternative No. 3 was recommended as the preferred alternative because of its lower capital and present value cost and higher effluent quality. The most significant disadvantages of this alternative relate to the increased operational complexity and slightly higher annual O&M cost due to aeration requirements.

Despite its increased complexity, the new plant provides appropriate technology for the needs of the community. The cost differential between the selected and other alternatives is very significant for a community facing considerable financial constraints. Furthermore, the new plant will be able to consistently and reliably meet effluent quality criteria.

## b. OPERATION AND MAINTENANCE PLAN

### 1) Start-up and Operations Plan

The operation and maintenance (O&M) manual for the plant will be prepared by the design engineer upon the completion of the construction of the plant. Development of this manual is not possible at this time since the as-built equipment needs to be known.

Traditionally, both the contractor and the equipment supplier conduct the initial start-up of plant equipment. This helps to ensure that the equipment is installed correctly and that starting the equipment improperly does not void the product warranty. This procedure helps protect the Owner (Westmorland) from claims by the manufacturer that the equipment was not installed or started up properly. The design engineer will submit detailed information on each piece of equipment chosen for this project for review. This will be done in the form of shop drawings and will determine if the equipment meets the requirements of the specifications. Equipment that does not meet the specifications is rejected and the contractor is required to submit a suitable unit.

Start-up operations assistance and training are a part of the project scope and schedule. The Operations Plan will be developed to ensure that the WWTP staff understand how to properly start-up and operate the facility. Start-up operations are planned for the year 2000, by which time the Start-up and Operations plan will be completed.

### 2) Contingency Plan

The Operations and Maintenance (O&M) Manual to be provided at the time of plant start-up will include Contingency Plans for operational problems.

### 3) Safety Plan

A Safety Plan which includes OSHA requirements shall be part of the O&M Manual.

### 4) Quality Assurance Plan

A Quality Assurance Plan will be prepared as part of the Start-Up Assistance scope of work.

### 5) Pollution Prevention Plan

The construction contractor will provide a Pollution Prevention Plan. It will include a Storm Water Pollution Prevention Plan required by the NPDES Permit.

## c. COMPLIANCE WITH APPLICABLE DESIGN REGULATION AND STANDARDS

The design engineer, Dudek and Associates, based its design on the American Society of Civil Engineers (ASCE) guidelines, the Ten States Standards, wastewater engineering books, and manufactured specifications. The decision as to what specific criteria to utilize for each component of the design was made by the consultant using their professional judgement. The 90% design documents were submitted to the Regional Water Control Board for review. The Regional Board issued comments that were incorporated into the final design.

# SECTION 4 - FINANCIAL FEASIBILITY AND PROJECT MANAGEMENT

The long term feasibility of this project will be possible by the subsidized construction of wastewater infrastructure with capacity to serve both existing and future needs within the City's sphere of influence. The utility customers will provide full funding for utility operations and ongoing capital replacement expenditures.

The community cannot provide the capital funding required for the necessary improvements. For this reason the City of Westmorland has sought funding, in the form of grants, to finance the construction the Border Environment Infrastructure Fund (BIEF) of the North American Development Bank (NADB), the US. Department of Agriculture – Rural Development (USDA-RD), and the State Proposition 204.

**TABLE 4.1**
**TOTAL PROJECT COST BREAKDOWN**

| Item/Task | Cost (US$) |
|---|---|
| **Construction** | |
| Miscellaneous | 1,213,700 |
| Septage Receiving Station | 293,500 |
| Sewage Grinding Station | 108,800 |
| New Influent Pump Station | 300,800 |
| RAS/WAS Pump Station | 148,000 |
| Oxidation Ditch | 544,900 |
| Clarifiers | 278,000 |
| Disinfection Facilities and Outfall | 282,400 |
| Sludge Drying Beds | 125,100 |
| **Construction Subtotal** | **3,300,000*** |
| **Other Expenses** | |
| Design Engineering/Project Management | $100,000 |
| Value Engineering | $20,000 |
| Bidding Services | $25,000 |
| Construction Management | $225,000 |
| Materials Quality Control | $25,000 |
| O&M Manual Preparation | $25,000 |
| Operation Support – Year 2000 | $40,000 |
| Assessment Engineering | $20,000 |

| | |
|---|---|
| Assessment District Fiscal Agent | $5,000 |
| Assessment District Bond | $35,000 |
| Facilities Plan | $257,200 |
| Contingency (10% of Construction) | $330,000 |
| **Subtotal Other Expenses** | **$1,107,200** |
| **Additional Costs Incurred to Date (Sunk Costs)** | |
| Regional Board Meetings | $10,000 |
| Influent Meter Installation | $7,500 |
| Black and Veatch Engineering Costs | $550,000 |
| Pump Repair and Replacement | $10,000 |
| **Subtotal Sunk Cost:** | **$577,500** |
| **PROJECT TOTAL** | **$4,984,700** |

**a. Financial Feasibility**

Table 4.1 shows the Project estimated total cost in $4.98 million. This cost includes the plant upgrade and expansion,, engineering design, management and other additional costs incurred to date by the City. It is important to point out that, besides construction costs, the financial feasibility analysis must include engineering, management and sunk costs.

The NADB has developed a financial analysis to determine the amount of Border Environment Infrastructure Fund (BEIF) grants the City can receive from this institution. Table 4.2 presents the financial structure recommended by the NADB. The table indicates that the proposed project will be funded by grants amounting to 66.4% of the total project cost, and a USDA loan equivalent to 33.6% of the total cost.

**TABLE 4-2**
**PROPOSED FINANCIAL STRUCTURE**

| Source | Amount (US$) | % of Total Cost |
|---|---|---|
| **Grants** | | |
| USDA | 1,278,000 | 25.6 |
| State | 257,220 | 5.2 |
| BEIF (to cover shortfall) | 1,777,500 | 35.6 |
| **Subtotal** | **3,312,720** | **66.4** |
| **Loans** | | |
| USDA (for new cost) | 1,094,500 | 22.0 |
| USDA (for sunk cost) | 577,000 | 11.6 |
| **Subtotal** | **1,671,500** | **33.6** |
| **TOTAL** | **4,984,720** | **100.0** |

The financial analysis indicate that no increases in the sewer fee rate will be required to finance the construction and operation and maintenance of the proposed project, as the existing rate structure is resulting in a yearly surplus at this time.

**1) Financial Statements – Historical**

The project cost analysis and financial information was prepared by Dudek & Associates, Inc. for the City of Westmorland as part of the facility plan report. Historical financial statements of FY94-95, FY95-96, FY96-97 and FY97-98 are shown in Exhibit 4.2 with the Westmorland WWTP Facility Plan.

**2) Financial Statements – Pro Forma**

The NADB rate study provide the cash flow and revenue projections through the year 2010 as shown in Exhibit 4.3. Based on Exhibits 4.2 and 4.3, the BECC completed the cash flow, O&M, and rate revenue projection through the year 2015 for the project life cycle. The Exhibit 4.4 shows that the existing rate structure will guaranty the sustainable operation of the wastewater treatment facility, including the future operation capital improvement needs.

### 3) Financial Structure of the Project and NADB Analysis

The total project estimated cost is $ 4.98 million dollars. The project consists of wastewater treatment construction expenditures of $3,300,000 dollars, engineering design and construction management expenditures of $1,107,200 dollars, and additional costs incurred to date of $577,500 dollars.

As previously indicated, the NADB has recommended the amount of grant money the project sponsor can receive from the BEIF. Additionally, the project sponsor will receive grant and loan funds from USDA and the State of California. The exact breakdown of the total cost among the financing institutions is presented in Table 4.2.

USDA has required, as a condition of the loan, that the City of Westmorland create an Assessment District, by which property owners will be assessed to recover the loan amount. In order to be able to create the District, the City has proved that the majority of the property owners support its formation. On June the 23rd, a public meeting was held at City Hall. At this time, the ballots received from property owners were counted, and the formation of the assessment district was approved by 63% of the votes.

### 4) Capital Improvement Plan/Budget

The table 4.1 itemizes the capital project expenditures. The projected expenditures are for fixed assets that will be capitalized to the water utility fixed asset inventory.

The FY98-99 Capital Improvement budget includes capital replacement, additional expenditures associated with the upkeep of this facility upgrade and expansion. The upgraded plant equipment are projected to be replaced within the next 10 years at an estimated cost of $1.5 million. Similarly, approximately 15% of the water system mains and valves will be in need of replacement in the next 25 years. These long-term capital expenditures are estimated based on the available fund reserve at the projected utility service rate-based revenues.

### 5) Operation and Maintenance Budget – Historical

A four year summary of the FY94-95 through FY97-98 operation and maintenance actual utility expenditures is included in Exhibit 4.4 as part of the BECC financial projections. The figures expressed in this summary were left in real values as provided by the City of Westmorland and the consultant. Projected values were kept with 1998 constant prices. The FY98-99 financial statements were not completed at the time of the BECC/NADB analysis and thus historical figures were analyzed for 1994 through 1997.

### 6) Operation and Maintenance Budget - Pro Forma

The pro forma projections are based on the FY97-98 financial statements and FY98-99 budget. The historical operation and maintenance costs were used to base the O&M projections in the Pro Forma

for the overall water and wastewater utility system.

The additional O&M cost of the new plant were added for the projections deducting the current expenses by the existing plant. The BECC projections through the year 2020 are kept in constant values considering an inflation rate of zero.

The following Table 4.3 shows the estimated operation and maintenance costs for the wastewater treatment plant for its first year of operation (i.e. 2001). It is important to point out that the O&M cost is flow dependent, and will increase as flows to the treatment plant do so. The annual O&M estimates throughout the life of the project are included in Exhibit 4.4.

**TABLE 4.3**
**PROJECT ESTIMATED ANNUAL OPERATION AND MAINTENANCE COST**

| ITEM | US$ |
|---|---|
| Salaries, Wages and Benefits | 64,500 |
| R&M, Sewer Plant | 4,100 |
| Electricity | 64,700 |
| Chemicals | 15,300 |
| Laboratory Testing | 15,500 |
| Other | 38,300 |
| **TOTAL** | **$202,400** |

### 7) Sensitivity Analysis

Sensitive variables which may impact the financial viability of the project include increase in project costs, rate of population growth, and reduced grant funding. The impacts of varying these elements are shown as the additional FY97-98 rate-based revenues from utility customers required in order to cover the changed variable.

### 8) Financial Break-Even Analysis

The City of Westmorland water utility is a self-supporting non-profit municipal service. The rate structure as recommended by the NADB, lists the utility rate-based revenues required to recover total costs, including O&M costs, capital-related expenditures, and funding of appropriate reserve levels. All revenues are based on the recovery of costs while maintaining adequate reserves during the projection period through FY03-04. As previously indicated, the proposed project will not result in a sewer service rate increase.

### 9) Demographic and Economic Information of the Proposed Service Area

Demographic and economic information for the City of Westmorland and the County of Imperial is shown in the facilities plan document (Exhibit3.2, Table 5-1). The projected population and utility water demands are also described under section 5 of the Facility Plan.

The population of the City was estimated at 1,713 on January 1997. This is the Official State Estimate furnished by the California Department of Finance, Demographic Research Unit. The State also estimated the total housing units at 507 and the single detached housing units at 380 or 75 percent of the total.

The Imperial County Community Economic Development Agency (ICCED) recently estimated the population at 2,300. They also projected that the future population in the year 2015 will be 4,200. This is a population growth of 83 percent in 18 years or 4.6% per year. Applying this to the 1,713 estimate produces a population of 3,130 inhabitants.

The City of Westmorland is included in the Imperial County labor market area. The largest industry within the County is agriculture. The unemployment rate based on August 1998 data was 32 percent. Because of the high unemployment and large pool of unskilled labor, Imperial County has become a prime target area for manufacturing and assembly plants. The community is primarily residential including some commercial establishments typical of small cities. There is no heavy industrial users that creates hazards for the City in providing and treating sewage.

**b. Fee/Rate Model**

After careful review of the existing rates, performed by the NADB and the BECC, it was fount that there is no need to increase the user rates. The existing water rates are high enough to support the project operation and maintenance requirements. The current water rates are shown in the table below.

c. **Project Management**

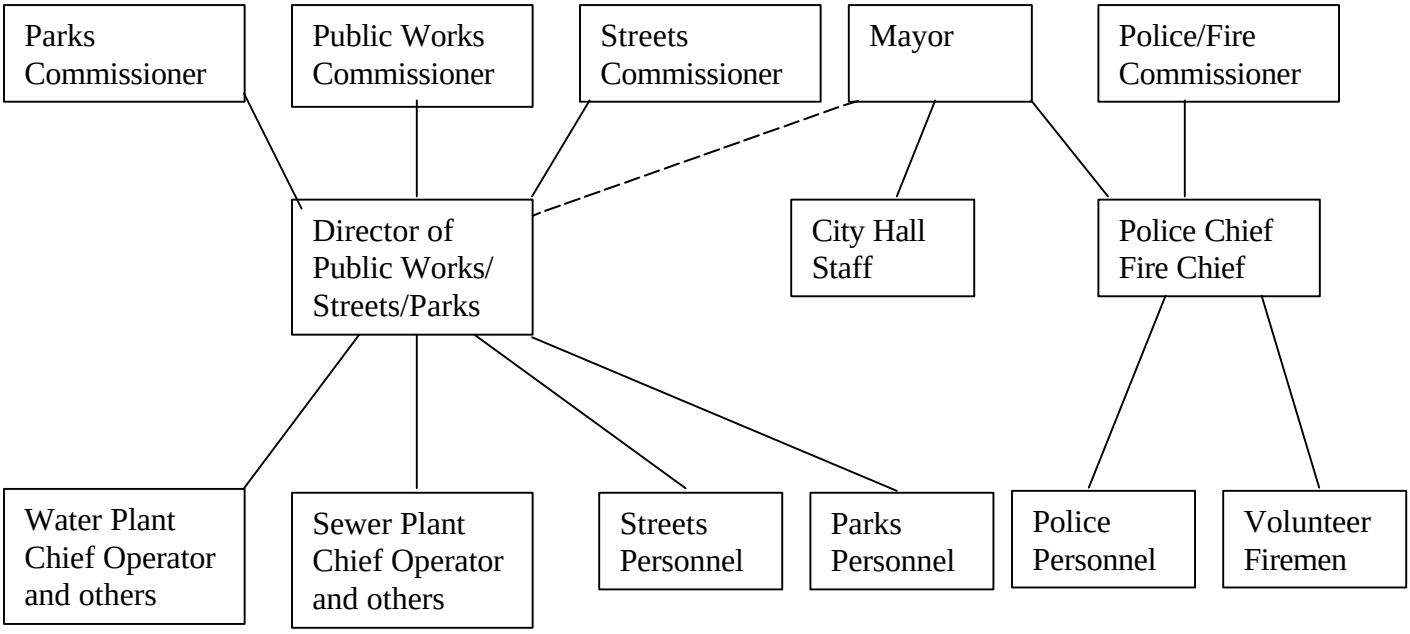
The City of Westmorland has five (5) Councilmembers, City Clerk, and City Treasurer who are elected to four-year terms. Elections are held every two years. Two Councilmembers are elected in a given election and three are elected the following election. The City Council also serves concurrently as the Planning Commission with the Mayor serving as the Chairman of the Planning Commission. In the event of a Council vacancy, the vacancy can be filled by appointment or special election. The Mayor and Mayor Pro Tem are selected by and among the seated Councilmembers on a yearly basis. The Mayor, upon being selected by the Councilmembers, appoints Councilmembers as Commissioners: Streets Commissioner, Public Works Commissioner, Police/Fire Commissioner, and Parks Commissioner. The Mayor directs City Hall staff and, in the absence of other Commissioners, directs the other departments as well. The Mayor Pro Tem performs the Mayor's duties in his absence.

The following organizational chart for the City of Westmorland depicts the positions of key management and functional department heads, and the lines of authority among the positions.

**ELECTED OFFICIALS OF THE CITY OF WESTMORLAND**

| Council Member | Council Member | Mayor | Mayor Pro Tem | Council Member | City Clerk | City Treasurer |
|---|---|---|---|---|---|---|

**ORGANIZATIONAL CHART WITH COUNCILMEMBERS AS DEPARTMENT COMMISSIONERS**




The key positions include the Director of Public Works/Streets/Parks, the Finance Director, the Water Plant Operators, and the Wastewater Plant Operators.

Project management and oversight will be performed by Mr. Joel Hamby, Director of Public Works. Other key personnel that will be involved in the project and work with Mr. Hamby are: City employees Joe Diaz, Director of Public Works; Joe Guzman, Wastewater Treatment Plant Chief Operator; Lucas Agatep, Water Treatment Plant Operator; Consultants/Engineers/Project Inspectors Dudek & Associates (George Litzinger, P.E.) Wastewater Plant engineers; Kennedy-Jenks (Mike Curran, P.E.) Water Plant engineers; Dudek & Associates (George Gibson) inspector.

**Institutional Capacity and Legal Frame Work**

The City of Westmorland was incorporated on June 30, 1934 under the laws of the State of California as a General Law City. Prior to that date, a community Sewer District had been formed. As a General Law City, Westmorland has the authority to provide utility services and collect fees for the services. The General Plan of Imperial County has identified Westmorland and its surrounds as an urbanized area. City services may be provided to the area around the City.

The Wastewater Treatment Plant design capacity has been determined by utilizing a combination of the population projections of Imperial Valley Association of Governments' and historical growth rate. These governmental data together with operation and maintenance costs form the basis for the utility rates which the City adopts by resolution from time to time as provided under California law. The City's authority to establish utility rates under the State law is not subject to any other governmental agency review or approval.

The City Council of Westmorland, by minute resolution, approved the filing and processing of the complete BECC application process and has requested BEIF monies for the construction of its proposed Wastewater Treatment Plant. Additionally, the City of Westmorland is completing the formation of an Assessment District as a requirement to obtain USDA-RD loan/grant funds. The Assessment District is being formed under the State of California Proposition 218 requirements. This process satisfies the legal requirements regarding "property related" charges. The proceeds of the assessments will repay the loan portion of the USDA-RD funding.

The City of Westmorland Wastewater Treatment Plant is operated under NPDES Permit No. CA0105007, Order No. 98-001 under the regulation of California Regional Water Quality Control Board. Additionally, the City is under Time Schedule Order No. 97-110 issued by the RWQCB. The City's Plant effluent is currently meeting the Permit requirements. The Plant is inspected frequently by RWQCB staff. A letter from the City Attorney regarding the City's legal powers is included (Exhibit 4.5).

## SECTION 5 - COMMUNITY PARTICIPATION

## 1- COMPREHENSIVE PUBLIC PARTICIPATION PLAN.

The objectives of the Comprehensive Public Participation Plan (Plan) are to ensure that the community understands and supports the environmental, health, social, and financial benefits and costs of the project, as well as any changes in user fees. A public participation plan was submitted by the City of Westmorland to BECC and such Plan includes the following elements: develop a steering committee, identify and meet with local groups and organizations, develop an carry out an outreach campaign, hold two public meetings, and gather documentation showing public support for the project in a final report. The activities related to this Plan are summarized below.

## 2- **STEERING COMMITTEE**.

The Westmorland Water Steering Committee was used for the wastewater project. The Committee was composed of five members and included: Martha Cruz, Chair, Homemaker / Homeowner / School Site Council Chair; Patricia McCutcheon, Recorder, Pensioner / Homeowner / Senior Citizens member; Edith Martin, Homeowner / Landlady; Edith Woodring Homemaker / Homeowner; Harley Martin, Retired I.I.D. employee.

The committee was responsible for developing and distributing public information, scheduling and preside over two public meeting and meet with local organizations. They also participated in the technical meetings and teleconferences with BECC, NADB, consultants and USDA personnel, met as necessary to evaluate the public outreach campaign, and attend several meetings with the Rural Water Quality Development Control Board of California (RWQCB).

## 3- **LOCAL ORGANIZATIONS**.

The steering committee and project proponent met with representatives of several local organizations such as the Westmorland Lions Club, the local Volunteer Fire Department, Westmorland Union School District Board, Westmorland Community Church, the local Senior Citizen Organization, 4-H Club and other churches to make presentations and solicit support for the project.

## 4- PUBLIC INFORMATION.

The Committee requested that survey forms / informational flyers be circulated to the residents both by mailing with the monthly City utility bill and by door-to-door hand delivery. The informational flyers and meeting notices were prepared in both English and Spanish. Notice of the Public Meetings was also circulated by mail and hand-delivered as well as being published in the local paper. City employees carried the survey and informational forms door-to-door on two occasions and a group of students and 4-H Club members carried the forms and meeting notices on two occasions (see Photo 4-1). The Assessment District formation process provided another opportunity to circulate project and financial information to the residents and property owners of the community. In the informational sheet mailed with the Assessment ballots, the names of Committee members and

Council members were listed for residents to contact for information regarding the projects and the Assessment District. Besides having translation services available at the Public Meetings, a special meeting was conducted on Monday, June 21st to provide information and answer questions for interested Spanish-speaking residents.

**PHOTO 4-1**
**School Volunteers who Passed Out Survey Forms for Wastewater Project**

- Westmorland City Hall

Survey forms and informational flyers were continuously available at City Hall, as well as the BECC Application document. The first flyer with information regarding both the Water and Wastewater Project was circulated in January of 1999. City staff members were available to answer questions or refer individuals to Committee or Council members.

- Media Coverage

The Imperial Valley Press provided coverage for the City's Water and Wastewater Projects. Besides publishing the Public Meeting notices, the newspaper carried several articles about the Wastewater Project as well as Opinion Columns in support of the Projects and the Assessment District formation. Also, prior to the initiation of the BECC Application process for the City's Wastewater Project, an interview was taped and broadcast on local television about the City's Water Plant Project.

## 5- PUBLIC MEETINGS

**Background**

The City of Westmorland decided to have its own wastewater and water treatment plants over a regional approach to water and wastewater treatment. A condition to receiving USDA loans for the wastewater plant was the formation of an Assessment District. The USDA indicated that Westmorland would have to form an Assessment District in order to pay back loans. USDA prefers the regionalization of projects, however, they were willing to fund Westmorland's sewer and water project if the residents showed support for the project and approved an the Assessment District.

**Public Meeting #1**

The first Public Meeting notice was published in the local newspaper 30 days before the meeting date of April 22, 1999 and was mailed with the monthly utility bill. Students delivered door-to-door the notice on April 6, 1999. The Public Meeting was held in the Westmorland Elementary School multi-purpose room. The meeting was attended by approximately 55 people, and was presided by Committee Chair Martha Cruz. The agenda included the project's technical presentation by the engineer consultants and comments from BECC and NADB staff. The question and answer period revealed that the uppermost issue in the residents' minds was the financial cost to them and the assessment. This information was not available during this meeting and the few questions were focused on the technical aspects of the project.

**PHOTO 4-2**
**FIRST PUBLIC MEETING**

**Pubic Meeting #2**

The second Public Meeting was held in on May 12th; the notice was published in the local newspaper. There were five students present at the meeting who assisted in circulating the attendance lists and

receiving written questions from the attendees. About 45 people were in attendance. The meeting was opened by steering committee Chair Martha Cruz. Attendance lists were signed by most of those present. NADB staff presented the rate study information, and the Assessment District consultant gave a presentation about the Assessment District process. He mentioned the District ballots were mailed and the deadline to submit the vote for the Assessment District was June 23. Translation was provided.

Following these presentations, Joel Hamby, of the City of Westmorland, relayed corrected information to the audience about the total cost to the residents. The current rate of $60.35 was to remain as the City's monthly billing for water and sewer operation costs, but the Assessment District cost will amount to $22.09 per month for a single family dwelling unit for a total monthly cost to each homeowner for water and sewer of $88.44 per month. At the conclusion of the meeting, Martha Cruz asked for a show of hands to indicate support and opposition for the project in light of the additional costs. About 14 people present indicated support for the project while nobody indicated opposition to it (survey results show that 94% of the overall respondents support the project). Committee Chair, Martha Cruz, concluded that the City must move ahead with the formation of the Assessment District and the project in order to comply with State and Federal requirements, and that the loan and grant funding is the most effective way to accomplish the project's goal. In the days following the meeting, Committee and Council members contacted residents to provide further information.

**Activities Conducted After the Second Public Meeting.**

Residents who had additional questions about the project and the financial impacts were responded to individually by Committee and Council members. Subsequent meetings were held with the RWQCB on June 2, and they suggested that the City write a letter to the agency's State office requesting State Revolving Fund low-interest loan funds to be able to move the Project to the construction stage. On June 10, another meting was scheduled with RWQCB in Indian Wells, California. City officials and steering committee members attended the meeting where Board members expressed support for Westmorland's efforts to measure up to the current requirements.

Other meetings were held with the Westmorland School Board and School Superintendent on June 15 and at City Hall on June 21with the Mexican-American community. A notice was prepared in Spanish and hand-delivered, which extended an invitation to the meeting. On June 23 the Assessment District vote was tallied. For approval it required 51% of the votes submitted. Final results show 63% in favor and 37% against the Assessment District.

## SECTION 6- SUSTAINABLE DEVELOPMENT

### a. DEFINITION AND PRINCIPLES

The long-term needs of the community have been identified and established by the City's Facility Plan. These needs are based on the long-term population expectations for the area and the demands placed on the wastewater system within the service area. The population projections for the community developed by the City anticipate growth for Westmorland.

The project will improve the quality of life in the community by preventing further leakage of wastewater through the berms and bottoms of the ponds, resulting in puddles forming around the plant and drainage into the trifolium. The project also ensures the effluent from the wastewater treatment plant is properly treated prior to its discharge, therefore avoiding the human health and environmental problems associated with a degradation of the water quality of the receiving agricultural drain, the New River, and the Salton Sea.

Underlying these considerations is the requirement by the regulatory agencies overseeing this utility that the City comply with the water quality parameters detailed in their discharge permit and the mandates detailed in their TSO. Continued violations of the permit and TSO will likely result in the levying of additional enforcement action, fines, the issuance of additional consent administrative orders, and a mandated schedule for compliance. Such measures may not coincide with either the availability of funding to the City or a realistic construction schedule of mandated plant improvements.

Given the opportunity, it is much more advantageous for the community to develop this project on the current schedule than to ignore the plant's current deficiencies This would then force the regulatory agencies into the position of increasing the enforcement action against the City.

The City of Westmorland conducted a series of public participation meetings aimed at explaining the requirements of the wastewater treatment plant expansion project and its effect on the community. The first public meeting was conducted on April 22, 1999 and the second meeting was held on May 12, 1999. The community's needs, its projected growth, and the impact and benefits of the project were detailed at the first public meeting with the majority of public comment in support of the project. At the second meeting the focus was on the financial impacts of the project and the community's ability to afford the costs associated with it.

Population projections made by the Imperial County Community Economic Development Agency (ICCED) and California Department of Finance, Demographic Research Unit along with information from Dudek & Associates were used for projecting wastewater flows for the service area. Therefore, the requirement that the City coordinate their efforts with the appropriate institutions in order to achieve a balanced planning effort and to utilize the available resources wisely has been addressed.

The project is consistent with BECC's definition of sustainable development *"conservation-oriented social and economic development that emphasizes the protection and sustainable use of resources, while addressing both current and future needs, and present and future impacts of human actions."* All environmental parameters have been met and the increase in water use and discharge is consistent with local planning documents. The expansion and upgrade of facilities will accommodate growth projected by the City for the community over the next 20 years.

The principles of sustainable development are met including: 1) "human beings are at the center and they are entitled to a healthy and productive life in harmony with nature." This principle is addressed by the purpose of the project, which is to address pollution and health risks associated with the present inadequate capacity of the system, and 2) stakeholders are a part of the process. The second principle is met by the public participation and outreach programs implemented (see Section 5, Public Participation).

## b. INSTITUTIONAL AND HUMAN CAPACITY BUILDING

The improved wastewater treatment plant will be operated, maintained and upgraded as required to serve the City of Westmorland. The City's O&M personnel have operated and maintained the water and sewer systems for 15 years. The wastewater treatment plant staff is both qualified and experienced in the operation and management of this system and is well equipped to implement the improvement project being considered by the City.

Current operations and maintenance staff are deemed sufficient to adequately handle the requirements of the expanded treatment system. One operator will be required to run the treatment plant during one shift per day, five days per week. Duties will include maintenance of equipment, adjusting pumps and disinfection chemicals, monitoring arrival of septage, taking samples and performing simple laboratory analyses for plant operations. Long term staffing needs may be filled by the advancement of qualified existing personnel within the City or by the hiring of personnel experienced in treatment plant operation from outside sources.

The advancement of administration and operations personnel is supported by local training programs, such as those offered by the Imperial Valley Community College in Imperial, California. The institutional and human capacity building within this parameter is centered around the staff training programs conducted by the City of Westmorland workshops conducted by the State Department of Health Services and the California/Nevada Section American Water Works Association's annual training sessions. These training options are offered to each of the operation and maintenance staff and their utilization is encouraged by the City.

Additional capacity of the infrastructure will allow the City the flexibility of continued system expansion without the constraint of an overloaded treatment facility. This translates into the ability to serve an increased client base, which in turn generates greater revenues for the Utility and the community through user charges and an increased tax base. The funding requirements associated with the construction of the proposed wastewater treatment plant improvements

project affords the City the opportunity to investigate and possibly reconfigure their rate structure to allow for a more equitable distribution of charges to their users. It is probable that rather than the flat user charge now levied, a tiered rate structure that allocates the charges based on usage can be implemented. In fact, as part of the NADB Institutional Development Program (IDP), a rate study is being developed, which will also improve the institutional and financial capacity of the district.

The expansion and upgrade of the existing wastewater treatment plant requires little in the way of increased institutional capacity, as the proposed technology is much the same as that being used today. The increased flow capacity will prevent the City from getting a moratorium from the authorities as the necessary treatment capacity will be met.

## c. CONFORMANCE WITH APPLICABLE LOCAL AND REGIONAL CONSERVATION AND DEVELOPMENT PLANS

The City of Westmorland has attempted to conform to all local and regional guidelines as well as state and federal regulations associated with the treatment of the raw wastewater delivered to the plant.

Contact Person:

Mr. David Kim
State Water Resources Control Board
Division of Clean Water Programs
1014 T Street, Suite 130
Sacramento, CA 95814
Phone: (916) 227-4573
Facsimile: (916) 227-4349

The expansion of this plant will take place on a site already owned by the City and will not require the acquisition of additional property. The land is currently used as a treatment site and thus will not require any changes in the zoning laws to accommodate the expansion.

Local and Regional Conservation and Development Plans. The project is consistent with general plan designations or zoning. General Plan Designation for the plant site is Government/Special Public on the Westmorland Area Map of the Imperial County General Plan. The plant is compatible with this zoning, A-2, agriculture. The plant is compatible with the adjacent designations and land uses.

Border XXI, an overarching regional environmental plan agreed to by the U.S. and Mexican governments, uses as indicators to measure sustainability of wastewater projects, the percentage of wastewater collected and treated and the percentage of the population with sewage system services. These two indicators were at 100% in 1998, and are expected to remain at that level

throughout the life-span of this project.

## d. NATURAL RESOURCE CONSERVATION

The addition of an oxidation ditch to this treatment plant will allow the City to effectively treat the influent sewage flows to their facility. Currently the plant is overloaded and in violation of its permit. With regard to conservation, expansion of the wastewater treatment plant will exert its greatest impact on the water quality of the receiving agricultural drain, the New River, and the Salton Sea. This impact is associated primarily with reducing the risks associated with pond leakage and with improperly treated effluent from the plant being discharged. Furthermore, the addition of the disinfection unit process will reduce public health risks associated with human exposure to pathogens.

Water conservation has not been historically a high priority in the Imperial Valley region for various reasons. Water is served to Imperial County by the Imperial Irrigation District (IID), which is responsible, to a great extent, as a catalyst in initiating the construction of Boulder Dam and the All-American Canal. As a result of its early entry into the water picture, the District has an allocation of 67 percent of the Colorado River water which is diverted to California and is able to charge very low water rates relative to other parts of California. Because of the low cost of water from IID ($11.50 per acre foot), the incentive for reuse of wastewater has not been strong in this area. Under present financial conditions a reclamation and reuse facility would not be cost effective.

The selected alternative allows for re-use of the effluent for irrigation purposes with sufficient disinfection. Addition of tertiary flocculation and filtration facilities to the extended aeration plant would allow re-use of effluent for water features, ponds, and irrigation. Because the selected alternative uses much less of the existing land, there has been talk of turning excess land into a City park. The sludge drying beds allow for the sludge to be dried and disposed of on a continuous basis. The possibility of using the sludge as an agricultural amendment has been explored.

**Energy Conservation**. The expanded plant would not require new power systems. The selected alternative is a new plant that will incorporate the latest technology and operating procedures to make it more energy efficient than the existing pond. Current power use is 338,300 kw-hr/yr; the expanded plant would use approximately 625,000 kw-hr/yr. Although the amount of energy is not mitigative, it is not considered significant in the CEQA analysis and will require no significant system alternations for the power provider. Energy conservation will be incorporated wherever feasible in the design of the new facilities, and there will be no conflict with energy conservation plans.

## e. Community Development

Upgrading the facilities to comply with state water quality and health regulations is beneficial to

the community.  Imperial County, in which the City of Westmorland is located, has historically experienced high levels of unemployment, with the October 1998 report showing an employment rate of 30 percent. This is due in part to the seasonal nature of the agricultural economy that dominates the Imperial Valley.

As a community grows, the tax base and revenues generated by this growth increases the services made available to the citizens. This increase in services tends to attract new businesses, which further increases the revenue stream within the community through payrolls, taxes and additional housing requirements. The long-range socioeconomic development of a community is extremely dependent on the infrastructure available within the community and its condition. Therefore, expansion of the wastewater treatment plant is the first step towards this infrastructure development.

Yet another positive impact of the plant construction is the protection of the receiving trifolium from degradation due to incompletely treated plant effluent. This helps maintain the quality of the environment adjacent to and downstream of the discharge point of the plant. Negative social impacts of the plant expansion are limited primarily to the changes in the charges for sewer that are levied on the system users.

It is important to point out that the proposed project will not result in a sewer rate increase, further, increasing the socioeconomic benefit of the project.