SUSTAINABILITY RATING AND EVALUATION OF CIVIL INFRASTRUCTURE PROJECTS IN THE DEPARTMENT OF PUBLIC WORKS CORE SERVICE AREAS

Prepared by

Sustainable Infrastructure Committee

October 2012

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EXECUTIVE SUMMARY

2011 Sustainability MAPP Goal

In 2011, Department of Public Works (DPW) Administration established a departmental goal (MAPP Goal) to adopt and implement the Institute for Sustainable Infrastructure's (ISI) sustainability rating system, and further implement their full program of education and research in order to establish a common platform to define sustainable infrastructure.

Using the rating system and supporting research for sustainability, the Department can evaluate and assess, at any point during its life cycle, the design, construction, and operation of our public works civil infrastructure of all sizes and complexities in terms of economic, environmental, and social impacts.

Ultimately, the Department will provide sustainable infrastructure, programs, and services that can transform the way public works infrastructure is designed, operated, and maintained. Further, the Department will develop a common language to inform stakeholders about sustainable project opportunities.

Formation of DPW Sustainable Infrastructure Committee

Public Works formed a Sustainable Infrastructure Committee in summer/fall of 2011 to adopt and implement the Institute of Sustainable Infrastructure's (ISI) Sustainability Rating System (*EnvISIon*^{TM}) into civil infrastructure projects in each of the Department's core service areas.

The Committee has 21 members representing 17 DPW divisions, including Dr. Youn Sim of Watershed Management Division as the chair. The Committee members were carefully selected to include representatives of various divisions to properly represent Public Works' core business areas where sustainable infrastructure planning, design, construction, and maintenance are key to achieving our strategic goals. All Committee members have joined the ISI as public agency members.

The Committee has evaluated several significant projects in DPW's core service areas. The goal is to evaluate these projects to identify planning, design, construction, and maintenance processes that can effectively integrate sustainable principles and practices. Eleven projects were selected by the Committee in three specific core service areas: Water Resources, Waste Management, and Transportation. Each project has been rated, and the results are provided in this report in terms of:

- Strengths and weaknesses of rated core service projects
- Possible improvements to the projects for enhanced sustainability
- Overall critique/suggestions to the rating system as it applies to each project type
- Benefits of using the rating system for DPW infrastructure planning

Sustainability into Actions in Department of Public Works Business: Next Step

As identified in 2005 the DPW Infrastructure Report Card, the DPW infrastructure needs much improvement to provide necessary public service for future generations. To fill this gap, DPW needs to take a holistic approach to ensure that its infrastructure and business programs are adequate to provide desired levels of service.

The holistic approach will have to focus on DPW service values that are beyond traditional ones to ensure and enhance the quality of life of our community and future generations. Sustainable and integrated practices will help achieve these values that must account for not only economic (commonly the main focus), but also environmental and social impacts of our business.

Implementing sustainable practices in the DPW services must start with evaluating all DPW infrastructure sectors and business programs and then pursue opportunities to promote partnership among them to coordinate different programs to improve overall DPW business efficiency. This will provide perfect opportunities to implement sustainable practices in an integrated manner to achieve synergetic effects among infrastructure sectors and business programs.

A sustainable infrastructure management planning can be an effective mechanism that would provide a road map and systematic path forward to plan and implement sustainable practices in an integrated manner. The key to a successful integration is a continuous communication among various infrastructure and business group leaders. The sustainable planning with an integrated approach will not only ensure program cost savings, but also help the environment and generate opportunities for socially desirable practices. Ultimately, this approach will lead the Department to achieving "Business Efficiency" in all programs and practices.

The first step of the sustainable infrastructure management planning is establishing clear goals and objectives and specific strategies to achieve them. For this purpose, 2012 departmental MAPP Goal (*Sustainable Infrastructure Initiative)* has been proposed in continuation of 2011 MAPP Goal. The 2012 *Sustainable Infrastructure Initiative* proposes to develop:

- Status and Gap Evaluation Report, which will evaluate existing infrastructure and programs and identify gaps between current business practices and sustainability service goals.
- Sustainability Practice Strategy Report, which will propose specific strategies and actions for systematic implementation of sustainable practices in an integrated approach.
- Public Works Sustainable Project Library for web publication, which will highlight Public Works' proactive actions in embracing and implementing sustainable practices.

The 2012 *Sustainable Infrastructure Initiative* will provide critical components of DPW's sustainable infrastructure management planning.

BACKGROUND

Public Works formed a Sustainable Infrastructure Committee in summer/fall of 2011 to adopt and implement the Institute of Sustainable Infrastructure's (ISI) Sustainability Rating system (*EnvISIon*^{TM}) into civil infrastructure projects in each of the Department's core service areas.

- The Committee has 21 members representing 17 DPW divisions, including Dr. Youn Sim of Watershed Management Division as the chair. The Committee members were carefully selected to include representatives of various divisions to properly represent Public Works' core business areas where sustainable infrastructure planning, design, construction, and maintenance are key to achieving our strategic goals. All Committee members have joined the ISI as public agency members. The list of the members is provided below:

Divisions	Members
Architectural Engineering	Mie Jones
Building and Safety	Hassan Alameddine Soheila Kalhor
Construction	Jalal Vahabnezhad
Design	David Chan Roy Cruz Joe Li
Environmental Programs	Coby Skye
Flood Maintenance	Hector Bordas
Geotechnical and Materials Engineering	Clarence Su Yoshiya Morisaku
Land Development	Andy Narag
Operational Services	Dai Bui
Programs Development	Josephine Gutierrez
Project Management I	William Honda
Project Management II	Luis Ramirez
Road Maintenance	Shailesh Patel
Traffic and Lighting	Daniel Quintana
Water Resources	Jack Husted
Watershed Management	Youn Sim (Chair)
Waterworks	TJ Kim

- The Committee has directly interacted with the ISI to establish continuous education and research opportunities.
    - Several Committee members have joined the ISI's six national committees. They will actively participate in ISI's activities to provide timely input to the ISI as improvements to the rating system are evaluated and implemented. The national committee members from Public Works are listed below:

ISI Task Committees	Members
Accreditation Committee	William Honda
Educational Committee	Youn Sim
Intergovernmental, Nonprofit, and Global Affairs Committee	Hector Bordas
Recognition Committee	Jalal Vahabnezhad
Research and Resources Committee	Paul Alva
Technical Committee	Youn Sim

- The Committee has evaluated the rating system and conducted a series of working meetings to determine how best to use the system to implement sustainable practices in DPW's civil infrastructure project design and delivery.
    - The Committee has focused on the following key issues of the *EnvISIon*^{TM} rating system:
        - Understanding the extensive technical aspects of the rating criteria, and how to properly apply the objective and subjective rating criteria to DPW's various project types.
        - Preparing technical, training, and policy level feedback to ISI for rating system enhancement through their national committees.
        - How the rating system can be used as a vehicle to fully integrate nationally recognized and established sustainability principles into DPW's civil infrastructure planning process.

- A process has been initiated to evaluate a variety of road and flood infrastructure improvement projects using the 2012 ISI rating system at the concept design phase.

DPW PROJECT SELECTION

The Committee has evaluated several significant projects in DPW's core service areas. The goal is to evaluate these projects to identify planning, design, construction, and maintenance processes that can effectively integrate sustainable principles and practices.

- Eleven projects were selected by the Committee in three specific core service areas: Water Resources, Waste Management, and Transportation. Each project has been rated, and the results are provided in this report using the following format:
  - Project evaluation results under each rating category (strengths and weaknesses)
  - Possible improvements to the project for enhanced sustainability
  - Overall critique/suggestions to the rating system as it applies to each project type
  - Benefits of using the rating system for DPW infrastructure planning
- Project titles and the Committee members in charge of individual project rating are listed below:

DPW Core Service Areas	Projects	Members
Water Resources	Oxford Retention Basin Multi-Use Project	Hector Bordas
		Joe Li
Water Resources	Strathern Pit Multi-Use Project	Youn Sim
		Joe Li
		William Honda
Water Resources	Quartz Hill Drain Project	Youn Sim
		Roy Cruz
Water Resources	Eaton Dam Inlet/Outlet Works Rehabilitation	Jack Husted
		Jalal Vahabnezhad
		Andy Narag
Water Resources	Pacoima Spreading Ground Rehabilitation	Jack Husted
		Joe Li
		TJ Kim
Water Resources	Developing a new groundwater well in Acton	TJ Kim
		Clarence Su
Water Resources	Big Tujunga Dam and Reservoir Sediment Removal Project (postproject evaluation)	Jack Husted
		David Chan
		Dai Bui
Transportation	Hasley I-5 Interchange Project (postproject evaluation)	Clarence Su
		Daniel Quintana
		Roy Cruz
Transportation	Bikeway project (as part of a Slauson Avenue complete street concept)	Shailesh Patel
		Daniel Quintana
		Lee Miler
Transportation	Old Road Widening	Hector Bordas
		Daniel Quintana
		David Chan
Waste Management	Lancaster Landfill	Paul Alva
		Youn Sim
		William Honda

SUMMARY OF PROJECT RATING RESULTS

The *EnvISIon*^{TM} captures and implements "Triple Bottom Line" principles of sustainability through 5 major categories of civil infrastructure planning. The 5 categories and their brief descriptions are presented below. Under the 5 categories, total 60 individual credits are used to rate the level of sustainable practices. See **Appendix A** for a complete list of 60 credits.

Rating Categories	Issues covered
Quality of Life (QL)	Enhance community's quality of life and sustainable growth Improve overall environment
Leadership (LD)	Demonstrate strong leadership Collaborate among project owner and team members with commitment
Resource Allocation (RA)	Reduce and preserve resources/materials and energy Practice sustainable material sourcing and procurement practices
Natural World (NW)	Preserve, enhance, and restore ecosystems (land, water, habitat, and biodiversity)
Climate and Risk (CR)	Reduce Green House Gas and air pollutant emissions Assess/mitigate climate change threats and infrastructure vulnerabilities

Total 11 DPW civil infrastructure projects in the DPW's three core service areas were rated under the 5 rating categories. **Table 1** summarizes each project's DPW core service area, category, type, components, and *EnvISIon*^{TM} rating results.

Discussions are provided on the overall summary of DPW projects' sustainable practices, followed by strengths and weaknesses of each service area. Possible improvements to the rated projects are also proposed that would enhance sustainable practices toward higher rating scores. In addition, critiques and suggestions to the *EnvISIon*^{TM} rating system are also provided. Finally, benefits of using *EnvISIon*^{TM} are also discussed.

Figure 1 illustrates rating score distributions (percent) of the 11 projects. Projects in the horizontal axis have been arranged in the order of increasing rating scores.

Table 1 : *EnvISIon*™ Rating results of 11 DPW Core Service Area projects

Projects	DPW Core service area	Project category	Project types	Project Components	Infrastructure Types	EnvISIon Rating					
						Quality of Life (percent)	Leadership (percent)	Resources Allocation (percent)	Natural World (percent)	Climate and Risk (percent)	TOTAL (percent)
New groundwater well in Acton	Water Resources	Water supply	Capital Project	Water Supply, Drinking Water quality management, Groundwater resources management	Drinking water infrastructure	36%	52%	44%	54%	41%	45%
Quartz Hill Storm drain	Water Resources	Flood Control	Capital Project	Drainage Deficiency mitigation: regional/local, Urban runoff and stormwater quality, Pavement Technology, Road Construction/maintenance	Traffic signals, Transit, Urban and Stormwater quality Best Management Practice (BMP) flood control systems, and streets highways	45%	64%	3%	29%	22%	31%
Oxford Retention Basin Multiuse enhancement	Water Resources	Multibenefit	Capital Project	Drainage Deficiency mitigation: regional/local, Reservoir and basin sediment cleanout and management, Aesthetic improvement, Urban runoff and stormwater quality, Recreational Opportunity, Open space/habitat enhancement	Flood Control system, Urban and Stormwater quality BMP	70%	77%	18%	79%	47%	57%
Pacoima Spreading grounds Enhancement	Water Resources	Water Supply	Repair/Rehab	Drainage Deficiency mitigation: regional/local, Reservoir and basin sediment cleanout and management, Aesthetic improvement, Urban runoff and stormwater quality, Recreational Opportunity, Open space/habitat enhancement, Stormwater Conservation and recharge, Groundwater resources management	Flood Control system, Spreading Grounds	43%	51%	31%	65%	46%	48%
Strathern Pit Multiuse	Water Resources	Multibenefit	Capital Project	Drainage Deficiency mitigation: regional/local, Reservoir and basin sediment cleanout and management, Aesthetic improvement (streetscape/landscape), Urban runoff and stormwater quality, Recreational Opportunity, Open space/habitat enhancement, Stormwater Conservation and recharge, Recycled/reclaimed water, Groundwater resources management, Road Construction/maintenance	Flood Control system, Urban and Stormwater quality BMP	65%	73%	29%	71%	48%	56%
Big Tujunga Dam Sediment Removal	Water Resources	Flood Control/SW Capture	Repair/Rehab	Reservoir and basin sediment cleanout and management, Stormwater Conservation and recharge	Flood Control system	23%	29%	36%	63%	44%	41%
Eaton Wash Dam Inlet/Outlet Rehabilitation	Water Resources	Flood Control/SW Capture	Repair/Rehab	Stormwater Conservation and recharge, Seismic rehabilitation, Electrical Rehabilitation	Flood Control system	38%	50%	35%	49%	44%	43%
Old Road over Santa Clara river and SPTCO	Transportation	Road/transportation	Repair/Rehab	Recreational Opportunity, Road Construction/maintenance, Bridge Replacement	Flood Control system	33%	28%	13%	19%	13%	22%
Hasley canyon Road Roundabout	Transportation	Road/transportation	Capital Project	Aesthetic improvement (streetscape/landscape), Stormwater Conservation and recharge, Road Construction/maintenance	Bridges, streets and highways, Street lighting	32%	31%	12%	45%	37%	32%
Slauson Ave Streetscape improvement	Transportation	Road/transportation	Repair/Rehab	Aesthetic improvement (streetscape/landscape), Road Construction/maintenance, Bridge Replacement	Bridges, streets, and highways	55%	42%	32%	23%	39%	38%
Lancaster Landfill Expansion	Waste Management	Waste Management	Repair/Rehab	Solid waste	Private Solid waste disposal site	59%	87%	53%	71%	43%	62%

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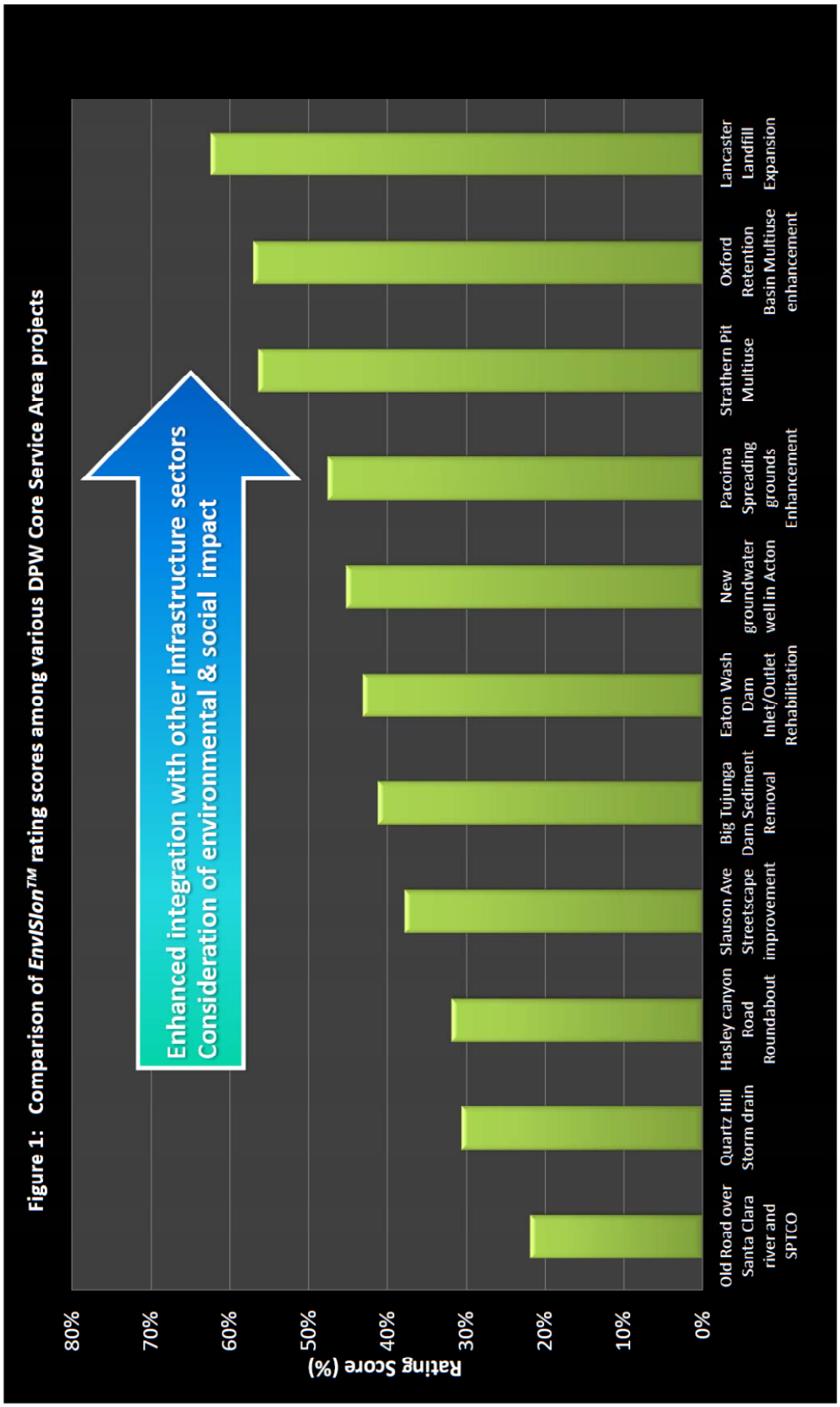


Figure 1: Comparison of EnvISion™ rating scores among various DPW Core Service Area projects
Enhanced integration with other infrastructure sectors
Consideration of environmental & social impact
Rating Score (%)
80%
70%
60%
50%
40%
30%
20%
10%
0%
Old Road over Santa Clara river and SPTCO
Quartz Hill Storm drain
Hasley canyon Road Roundabout
Slauson Ave Streetscape improvement
Big Tujunga Dam Sediment Removal
Eaton Wash Dam Inlet/Outlet Rehabilitation
New groundwater well in Acton
Pacoima Spreading grounds Enhancement
Strathern Pit Multiuse
Oxford Retention Basin Multiuse enhancement
Lancaster Landfill Expansion

It should be noted that presented scores were obtained from using the latest version *EnvISIon,*[TM] whose strengths and weaknesses have been extensively discussed by the Committee. Results presented here were used only for a relative comparison purpose among rated projects and were not meant to represent objective evaluation of individual projects.

A close observation of the *EnvISIon*[TM] rating distributions among projects revealed a unique and clear trend in project characteristics that may have contributed to increasing sustainability rating.

With increasing rating scores, projects tend to serve multiple purposes and include components that support diverse infrastructure sectors. In other words, traditionally single-purposed infrastructure functions were greatly enhanced when integrated with other infrastructure sector components by drawing synergetic effects. Examples include road expansion with added recreational space, water supply facilities with enhanced open spaces/habitats, flood protection facilities with water quality function, or solid waste disposal site with energy generation opportunity to mention a few. In addition, projects with higher scores appear to increasingly consider environmental impact and subsequently propose measures to mitigate it. Examples include project components that would directly support stormwater quality, habitat preservation/restoration, wetland function, and reduction of Green House Gas (GHG) emission. Furthermore, social acceptance of the projects was a key parameter in project concept such as aesthetic and functional improvement to support as community values and life style, and convenience of access to the amenities that the projects created. Other important project components used to gain social support included recreational opportunity, open space development, and promotion of renewable fuel use.

One unique service area rated was Waste Management. Unlike the other service areas, the infrastructure owner was not DPW, but a private entity (landfill owner/operator). The role of DPW is issuing a conditional use permit to the landfill operator where various conditions can be negotiated to mandate, encourage, or promote sustainable practices. Many conditions included in the permit (often sustainable practices) are in fact required by California's stringent environment regulations, which have contributed to the high score of Waste Management Project.

Although not rated in this report, "Development Planning" core service area projects would be in a similar situation where various sustainable practices can be imposed on permittees (land developers) through a development permitting process.

For Waste Management and Development Planning service areas, since the permit conditions and consequent financial impact are not actually realized by the permitting agency (DPW), the financial impact would need to be carefully evaluated from the permitees' perspectives. The key would be to impose necessary sustainable practices in the permit while considering permitees' economic incentive to still pursue the projects (i.e., landfill or land development).

Weaknesses and strengths of rated projects

In order to develop a basic understanding of the level of sustainable practice in DPW's core service areas, a simple, high level analysis was performed using average rating scores of the projects in each core service area. Accuracy of presented analyses may vary depending on the number of projects used to represent each core service area (7 Water Resources, 3 Transportation, and 1 Waste Management projects).

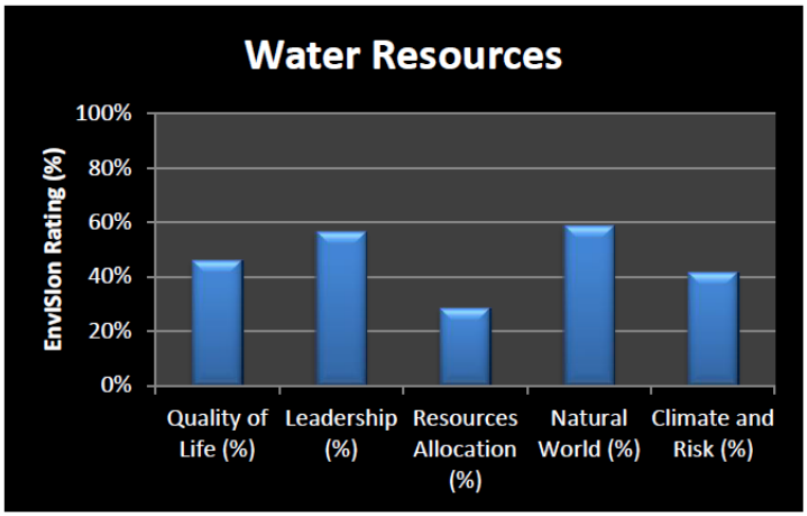
Figure 2 presents comparison between different rating categories in each core service area. Detailed rating results and analysis for each project are presented later in this report under the section titled *PROJECT RATING REPORTS IN DPW CORE SERVICE AREAS*.

Projects across all three core service areas appear to share consistently similar weakness and strengths. In general, projects were rated high in Leadership (LD) and Natural World (NW) categories and low in Resources Allocation (RA) and Climate and Risk (CR) categories. Only Transportation service area projects were rated slightly higher in Quality of Life (QL) than LD and NW. Details on weaknesses and strengths of each service area are discussed below.

Water Resources service area

Weaknesses

Water Resources projects were generally rated lower in RA and CR categories. It was mainly because DPW project planning does not typically involve an analysis of embodied energy need for materials manufacture or transportation. Further, DPW standard contract specifications do not have provisions that require the use of regional material, recycled byproducts, or products from manufacturers that support sustainable practices. Similarly, low scores were obtained for CR category because DPW project planning does not traditionally involve climate assessment, and carbon cycle and GHG emission analysis for typical water resources projects.



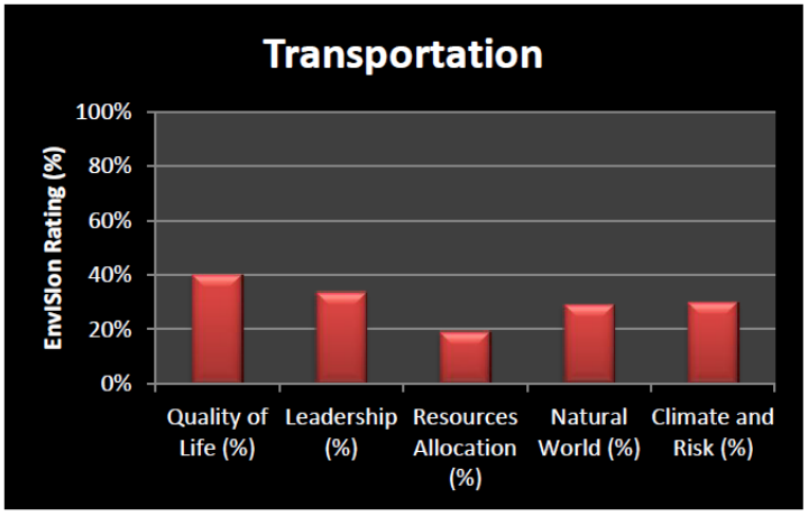


Figure 2: Comparison among *EnvISion*™ rating categories for each core service area

Strengths

Strengths of Water Resources projects were found in LD and NW categories. In development of Water Resources projects, DPW has shown strong leadership and commitment on sustainability with extensive community outreach, promotion of multibenefit project concepts, and recent revision of DPW Strategic plan to establish "*Sustainability"* as one of its core values. Most of Water Resources projects included components that minimize or avoid impact on or enhance critical natural habitat. Many of stormwater projects not only function as stormwater capture/recharge and flood protection facilities, but also provide stormwater quality treatment using constructed wetlands and retention basins ultimately to protect rivers and stream habitats.

- **Transportation service area**

Weaknesses

Transportation projects shared the same weakness categories (RA and CR) with Water Resources projects. See *Weakness* of Water Resources service area for details. Further, Transportation projects may experience particular weakness under NW and CR categories because traffic deficiency is often times mitigated by adding more lanes, which inevitably would add more impervious areas, contributing to more polluted stormwater discharges, and more heat island effect.

Strengths

Transportation projects' strengths were in QL and LD categories. As part of developing solutions for vehicular mobility and traffic congestion mitigation, significant efforts were made to get high score in QL, which included aesthetic enhancement, alternative mode of transportation (new bike trails), and maximum use of existing developed area to avoid newly disturbed areas. See *Strengths* of Water Resources service area for details for high score in LD category.

- **Waste Management service area**

Weaknesses

Waste Management Project shares the same weakness categories (RA and CR) with Water Resources projects. See *Weakness* of Water Resources service area for details.

Strengths

Waste Management Project shares the same strength categories (LD and NW) with Water Resources projects. See *Strengths* of Water Resources service area for details. In addition to the DPW's strong commitment to sustainable practices, Waste Management project's extra efforts also contributed to high sore in LD category, which involved effective use of

community advisory group appointed by the Board of Supervisors to actively address residents' concerns in developing the Conditional Use Permit.

Possible project improvements for enhanced sustainability

After the sustainability rating was completed and weaknesses and strengths were identified, the Committee proposed possible project improvement options that could be implemented to enhance project ratings. The proposed options can be considered for future sustainable project planning under each core service area.

- **Water resources service area**

  a. Use recycled water and renewable energy sources (solar powered lighting or pumps)
  b. Use stormwater for irrigation purposes in landscaped areas and open spaces
  c. Adopt sustainable procurement policy for purchasing various materials for facility maintenance/repair or new construction
  d. Adopt special provisions in design manuals, construction specifications, and bid package, mandating, at the maximum extent practicable, recycled, reused, and regional material uses, and local recruitment of work force.
  e. Promote integration between infrastructure sectors
     - Water resources with transportation (i.e., stormwater capture/treatment enhanced with bioretention parkway and pervious pavement parking lane)
     - Water resources with recreation/open space (i.e., stormwater facilities that accommodate recreational spaces)
  f. Conduct carbon lifecycle analysis and climate impact studies for enhanced evaluation of project impact or benefits

- **Transportation service area**

  a. Use more recycled and reused materials
     - Use demolition materials as base materials for new and rehabilitating pavement
     - Use unwanted byproducts from nearby construction sites or provide demolition materials to other construction sites for byproduct synergy
  b. Same as in C Water Resources
  c. Same as in D Water Resources: integration with water resources sector
  d. Same as in E Water Resources
  e. Consider alternative ways to address traffic congestion such as reduction of traffic volume from the source without expanding road capacity

f. Use grey water, recycled water, or stormwater at construction sites to reduce fresh water use

- **Waste Management service area**

a. Consider using an MOU with permittees (landfill operators) to implement various sustainable practices beyond current regulatory requirements that are focusing mainly on mitigating immediate environmental impact.

Suggested improvements to *EnvISIon*™

The Committee has conducted extensive discussions on how *EnvISIon*™ can be improved to effectively rate a variety of civil infrastructure projects and practices. The following are the key suggestions identified. More project specific suggestions are provided later under each project rating section.

- Additional credit may need to be allocated for public health and safety aspects as they are often the primary objectives of typical civil infrastructure projects.

- The rating system may not provide enough flexibility to be applied to typical public agency projects such as repair and rehabilitation (R/R) type projects. Some of the credits may have been intended solely for new capital projects and consequently may not be appropriate or irrelevant to R/R type projects. More flexibility to use "Exclude" option should be given to those credits.

- The rating system tends to give more points for mitigating impacts the project caused than no impact caused at all. Points should be given to avoid the impacts from the start where the existing conditions are already favorable.

- Many environmental measures are implemented in California due to the State's stringent environmental regulations while in many other states the same measures can be considered "Innovative." Additional credit may be warranted for such measures in California.

- The rating system promotes conducting analyses such as Infrastructure Life Cycle, Carbon Life Cycle, Green House Gas (GHG) emission, and climate change adaptation. As these are not typical components of traditional civil infrastructure planning, ISI may need to provide standards for these analyses to establish an industrywide consistency.

- Among 5 rating categories, there seem to be an overemphasis on Natural World (NW) category. For example, over 200 credit points were allocated to NW while the other 4 categories have around 180 points or less. Some of the credits in NW seem redundant and, therefore, can be combined to reduce total points to be comparable to the other categories.

- Although the *EnvISIon*^{TM} did an excellent job in capturing triple bottom line principles of sustainability, the "Economic" component seems to be under represented in the rating system. Credits appear to be allocated more on "Environmental" and "Social" components while economic consideration may be weak. Balanced economic consideration is essential in infrastructure planning as sustainable funding development will be critical to implement identified sustainable practices.

Benefits of using *EnvISIon*^{TM}

The Committee has found many benefits of using the *EnvISIon*^{TM} for DPW's civil infrastructure planning. Below are some of the key benefits identified by the Committee:

- It can provide a good tool/checklist and guidance on sustainability principles to consider during initial stage project planning or concept development.

- It helps with introducing more sustainable ideas and mindset and specific elements into project concept to make the project meet the DPW's sustainability goals.

- Application of *EnvISIon*^{TM} to the existing projects and practices provides opportunities to review the Department's current practices against sustainability goals.

- It provides an opportunity to consider new funding strategies that would support DPW sustainability service goals in terms of resource/funding needs, allocation, and budget time frame among others.

PROJECT RATING REPORTS IN DPW CORE SERVICE AREAS

Report Format

Instructions: *Please follow the format provided below, adjusting as necessary for your project. Authors should cite works by others and design manuals/guidelines used, as well as support descriptions with figures/tables, as appropriate.*

Project Title:

Author(s) and Division(s):

Partnering Agencies: (List all agencies participated including funding agencies)

Project Category(s): (mark all that apply)

___	Multibenefit	___	Water Supply	___	Flood Control/ Stormwater Capture	___	Waste Management	___	Road/ Transportation

Project Type(s): (mark all that apply)

___	Capital project	___	Repair and Rehabilitation	___	Emergency operation

Project Component(s): (mark all that apply)

___	Drainage deficiency mitigation: regional/local	___	Reservoir and basin sediment clean out and management	___	Aesthetic improvement
___	Urban runoff and stormwater quality	___	Recreational opportunity	___	Open space/habitat enhancement
___	Stormwater conservation/recharge	___	Water supply development/enhancement	___	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	___	Groundwater resource management

____	Pavement technology	____	Road construction/maintenance	____	Solid waste
____	others	____		____	

Infrastructure type(s): (mark all that apply)

____	Public buildings	____	Airport	____	Bridges
____	Flood control systems (all major and appurtenant facilities)	____	Spreading grounds	____	Seawater barriers
____	Drinking water infrastructure	____	Streets and highways	____	Street lighting
____	Traffic signals	____	Transit	____	Urban runoff/Stormwater quality BMP
____	Others	____		____	

EXECUTIVE SUMMARY (one page max)

Overall summary of project and rating results

BACKGROUND – Why was the project done?

1. Project owner and location
2. Preproject condition, existing practice
3. Project need: current deficiency/inefficiency identified

PROJECT DESCRIPTION – What was done?

1. Project details
    a. Project objectives and activities
    b. Sustainable practices utilized or integrated into the existing practice
    c. Funding details

ANALYSIS OF RATING RESULTS

1. EnvISIon summary report
   Content: attach the summary table and bar graphs from EnvISIon.

2. Comparison among categories
   Content: Under which categories did your project gain the most and least points and why?

3. Analysis under each category (strengths and weakness)
   Content: Which questions did you get higher and lower points and why? Discuss under each category.

    a. Quality of Life
    b. Leadership
    c. Resources Allocation
    d. Natural World
    e. Climate and Risk

4. Possible improvements to be made
   Content: What are the possible changes/additions that could be made in order to make this project a more sustainable infrastructure?

5. Overall critic of the rating system
   Content: what changes to EnvISIon would you recommend for a fair rating of the type (i.e., road, stormdrains, and dams) and practice (capital or rehab project) your project represents?

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Developing a new groundwater well in Acton

Core Service Area: Water Resources

Instructions: *Please follow the format provided below, adjusting as necessary for your project. Authors should cite works by others and design manuals/guidelines used, as well as support descriptions with figures/tables, as appropriate.*

Project Title: Developing a new groundwater well in Acton

Author(s) and Division(s): Los Angeles County Waterworks District 37 (District)

Partnering Agencies: (List all agencies participated including funding agencies) TBD

Project Category(s): (mark all that apply)

___	Multibenefit	_X_	Water Supply	___	Flood Control/ Stormwater Capture	___	Waste Management	___	Road/ Transportation

Project Type(s): (mark all that apply)

_x_	Capital project	___	Repair and Rehabilitation	___	Emergency operation

Project Component(s): (mark all that apply)

___	Drainage deficiency mitigation: regional/local	___	Reservoir and basin sediment clean out and management	___	Aesthetic improvement
___	Urban runoff and stormwater quality	___	Recreational opportunity	___	Open space/habitat enhancement
___	Stormwater conservation/recharge	__x_	Water supply development/enhancement	_x_	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	_x_	Groundwater resource management
___	Pavement technology	___	Road construction/maintenance	___	Solid waste
___	others	___		___	

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	___	Bridges
___	Flood control systems (all major and appurtenant facilities)	___	Spreading grounds	___	Seawater barriers
_x_	Drinking water infrastructure	___	Streets and highways	___	Street lighting
___	Traffic signals	___	Transit	___	Urban runoff/Stormwater quality BMP
___	Others	___		___	

EXECUTIVE SUMMARY (one page max)

Overall summary of project and rating results

The project to drill a new well in Acton is in the concept phase. Currently, the District is determining possible locations for the new well. The District provides water to the region through two sources: Groundwater from the District's wells and treated surface water purchased from Antelope Valley East-Kern Water Agency (AVEK). Due to growing Nitrate and entrained air issues with the groundwater, the District has had to rely more on AVEK recently to meet the water demand. However, treated surface water from AVEK contains a high concentration of organic materials (TOC), which form a contaminant known as THM when reacts with chlorine. THM's are cancer causing; thus, an even more stringent THM regulation will become effective in October 2013. The District is likely to violate this regulation utilizing its current operations. So in order to meet the regulation, possible options would be to implement a GAC treatment of the surface water to remove the TOC, switch the disinfection method to Chloramines, which would reduce the reaction, or provide additional groundwater. During an extensive public outreach regarding these options, it was determined that GAC treatment is too expensive and Chloramines are not accepted by the public. The District must provide additional groundwater to meet water demand and water quality regulations. The District will design the well and hire a contractor to drill the well. The District will own, operate, and maintain the well.

This project scored 317 points out of a possible 702 points, or 45 percent, in the Envision Sustainable Infrastructure Rating System. The scoring was mostly balanced between the five sections: Quality of Life, Leadership, Resources Allocation, Natural World, and Climate and Risk. The project scored the lowest in Quality of Life with 36 percent and highest in Natural World with 54 percent. The Quality of Life Section scored low due to the project having a very specific purpose and not much extra benefit to be done. For example, the project will not do much for local skills and capabilities, public health and safety, historic and cultural resources, local character, and public space. The project scored highest in the Natural World Section mostly due to the project being so small and out of harm's way. The project was able to score well in certain categories just by simply not affecting much of the habitat and water quality, and keeping existing local habitats.

Possible changes or additions to the project that could be made in order to make the project more sustainable would be to use a submersible pump to minimize operating noise. However, that may not be necessary as it is unlikely for there to be any noise complaints. Also, the project could consider the use of recycled materials as well as utilizing renewable energy to supply electricity to run the well's motor. These options will be considered; however, at this time, it does not appear to be cost-effective.

The rating system is very comprehensive. There is so much detail in each category that sometimes it is difficult to achieve the big picture result of being sustainable. Additionally, the rating system requires an extensive amount of time to understand and answer levels of achievement. There are many questions where if nothing sustainable was done for the project,

the level of achievement could still be very high simply due to the project initially not having much impact. For example, this project will already have very minimal impact on habitat, wetland, and surface water. This could also work vice versa where a large project is making an effort to be as sustainable as possible, but scores very low due to still having an impact. Thus, the rating system score may not be representative of how sustainable the project really is.

Also, for a standard or typical project, it is difficult to justify additions to improve sustainability when the cost-benefit is not favorable. And the levels of achievement for some questions in the rating system are unknown when the project is in the early concept phase.

Finally, there are specific comments and suggestions to make the rating system balanced for our Department's projects.

First, there is a need for more credits and points for public health and safety, and economics to evaluate our projects fairly. Many of our typical projects such as road resurfacing, building storm drains, flood control facility maintenance, and drinking water treatment are mainly for improving public health and safety cost-effectively to support sustainable communities; however, they do not score well due to lack of credits for such benefits.

Second, there are too many questions and points allocated for habitat and climate, and some of those questions are almost identical, many questions are similar. For example, NW1.2 protect wetlands and surface water (18 points) is practically identical to NW3.4 maintain wetlands and surface water functions (19 points). Also, NW1.1 (18 points), NW1.7 (23 points), NW3.1 (16 points), and NW3.2 (11 points) are all related to habitat; and CR1.1 (25 points), CR2.1 (15 points), CR2.2 (20 points), and CR2.3 (20 points) are related to climate change, adding a lot of redundancies in those categories.

This rating system does bring up a lot of excellent ideas and questions that would be useful when determining what can be done to make the project as sustainable as possible. The rating system would be very beneficial as a checklist at this point rather than trying to achieve a subjective score.

BACKGROUND – Why was the project done?

4. Project owner and location: Los Angeles County Waterworks District 37 – Acton, CA
5. Preproject condition, existing practice: Desert. The District serves 4,350 residents through three wells, three pump stations, four tanks, and water purchased from Antelope Valley East Kern Water Agency (AVEK).
6. Project need (current deficiency/inefficiency identified): Water Quality Deficiency

PROJECT DESCRIPTION – What was done?

2. Project details
   The project to drill a new well in Acton is in concept phase. Currently, the District is

determining possible locations for the new well. The District provides water to the region through two sources: Groundwater from the District's wells and treated surface water purchased from Antelope Valley East-Kern Water Agency (AVEK). Due to growing Nitrate and entrained air issues with the groundwater, the District has had to rely more on AVEK recently to meet the water demand. However, treated surface water from AVEK contains a high concentration of organic materials (TOC), which form a contaminant known as THM when reacts with chlorine. THM's are cancer causing; thus, an even more stringent THM regulation will become effective in October 2013. The District is likely to violate this regulation utilizing its current operations. So in order to meet the regulation, possible options would be to implement a GAC treatment of the surface water to remove the TOC, switch the disinfection method to Chloramines, which would reduce the reaction, or provide additional groundwater. During an extensive public outreach regarding these options, it was determined that GAC treatment is too expensive and Chloramines are not accepted by the public. The District must provide additional groundwater to meet water demand and water-quality regulations. The District will design the well and hire a contractor to drill the well. The District will own, operate, and maintain the well.

a. Project objectives and activities (see project details)
b. Sustainable practices utilized or integrated into the existing practice
   The overall project purpose integrates sustainability by providing a reliable high-quality drinking water source. The project also incorporates efficient design and construction integration, long-term maintenance plan, efficient operation, land preservation, and minimal disturbances.
c. Funding details (TBD).

ANALYSIS OF RATING RESULTS

6. EnvISIon summary report
   Content: attach the summary table and bar graphs from EnvISIon.

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	152	54	0	54
LD	106	55	0	55
RA	151	66	0	66
NW	177	95	0	95
CR	116	47	0	47
Total Project Points	**702**	**317**	**0**	317

7. Comparison among categories
   Content: Under which categories did your project gain the most and least points and why?
   The project scored the lowest in Quality of Life with 36 percent and highest in Natural World with 54 percent. The Quality of Life Section scored low due to the project having a very specific purpose and not much extra benefit to be done. For example, the project will not do much for local skills and capabilities, public health and safety, historic and cultural resources, local character, and public space. The project scored highest in the Natural World Section mostly due to the project being so small and out of harm's way. The project was able to score well in certain categories just by simply not affecting much of the habitat and water quality, and keeping existing local habitats.

8. Analysis under each category (strengths and weakness)
   Content: Which questions did you get higher and lower points and why? Discuss under each category.

   f. Quality of Life

   Higher – Improving community quality of life because the project addresses community's long-term drinking water needs to be reliable and clean. Improve site accessibility, safety, and way finding by including a sign and fence.

Lower – Develop local skills and capabilities because it is not designed to build significant local skills and capabilities. Preserve historic and cultural resources because no preservation considered beyond regulatory compliance (CEQA) and no feasibility analysis to incorporate preservation. Preserve views and local character because nothing proactive can be done. No public space enhancement.

g. Leadership

Higher – Provide effective leadership and commitment because of Department's and Division's strong commitment to the principles of sustainability. Foster collaboration and teamwork because the project owner, design, and construction teams all work very closely together. Provide for stakeholder involvement because of an extensive community outreach for the project. Plan for long-term monitoring and maintenance because we already have an extensive well maintenance program in place.
Lower – Establish a sustainable management system because we have not created a comprehensive sustainable policy yet. Address conflicting regulations and policies because we haven't tried to change laws and regulations that restrict more sustainable practices.

h. Resources Allocation

Higher – Commission and monitor energy systems because of energy efficiency evaluation is done on all wells every 2 years. Monitor water systems because a program is in place to monitor performance and impact, groundwater level, and water quality.
Lower – Reduce potable water consumption because the project does not use potable water. We haven't done life-cycle energy assessment, and haven't considered sustainable procurement practices, and use of recycled materials.

i. Natural World

Higher – Preserve prime habitat because the project will comply with CEQA. Protect wetlands and surface water because the project has minimal impact on them.
Lower – Preserve floodplain functions because the project is located in a floodplain. Preserve Greenfields because the project is located on undeveloped land.

j. Climate and Risk

Higher – Reduce air pollutants because the project has minimal air quality impact. Prepare for long-term adaptability because providing groundwater is more reliable than surface water.
Lower – Reduce greenhouse gas emissions because we haven't done life-cycle carbon assessment. Assess climate threat because we haven't done a comprehensive climate impact assessment.

9. Possible improvements to be made

Content: What are the possible changes/additions that could be made in order to make this project a more sustainable infrastructure?
Possible changes or additions to the project that could be made in order to make the project more sustainable would be to use a submersible pump to minimize operating noise. However, that may not be necessary as it is unlikely for there to be any noise complaints. Also, the project could consider the use of recycled materials as well as utilizing renewable energy to supply electricity to run the well's motor. These options will be considered; however, at this time, it does not appear to be cost-effective.

10. Overall critic of the rating system

Content: what changes to EnvISIon would you recommend for a fair rating of the type (i.e., road, stormdrains, and dams) and practice (capital or rehab project) your project represents?
The rating system is very comprehensive. There is so much detail in each category that sometimes it is difficult to achieve the big picture result of being sustainable. Additionally, the rating system requires an extensive amount of time to understand and answer levels of achievement. There are many questions where if nothing sustainable was done for the project, the level achievement could still be very high simply due to the project initially not having much impact. For example, this project will already have very minimal impact on habitat, wetland, and surface water. This could also work vice versa where a large project is making an effort to be as sustainable as possible, but scores very low due to still having an impact. Thus, the rating system score may not be representative of how sustainable the project really is.

Also, for a standard or typical project, it is difficult to justify additions to improve sustainability when the cost-benefit is not favorable. And the levels of achievement for some questions in the rating system are unknown when the project is in the early concept phase.

Finally, there are specific comments and suggestions to make the rating system balanced for our Department's projects:

First, there is a need for more credits and points for public health and safety, and economics to evaluate our projects fairly. Many of our typical projects such as road resurfacing, building storm drains, flood control facility maintenance, and drinking water treatment are mainly for improving public health and safety cost-effectively to support sustainable communities; however, they do not score well due to lack of credits for such benefits.

Second, there are too many questions and points allocated for habitat and climate, and some of those questions are almost identical, many questions are similar. For example, NW1.2 protect wetlands and surface water (18 points) is practically identical to NW3.4 maintain wetlands and surface water functions (19 points). Also, NW1.1 (18 points), NW1.7 (23 points), NW3.1 (16 points), and NW3.2 (11 points) are all related to habitat; and CR1.1 (25 points), CR2.1 (15 points), CR2.2 (20 points), and CR2.3 (20 points) are related to climate change, adding a lot of redundancies in those categories.

This rating system does bring up a lot of excellent ideas and questions that would be useful when determining what can be done to make the project as sustainable as possible. The rating system would be very beneficial as a checklist at this point rather than trying to achieve a subjective score.

Quartz Hill Storm Drain

Core Service Area: Water Resources

Project Title: Quartz Hill Storm Drain Project

Author(s) and Division(s): Roy Cruz (DES) and Youn Sim (WMD)

Partnering Agencies: City of Palmdale and City of Lancaster; Antelope Valley Drainage Fee Fund V42, SD5 Road Funds

Project Category(s): (mark all that apply)

___	Multibenefit	_ _ _	Water Supply	_X_	Flood Control/ Stormwater Capture	___	Waste Management	___	Road/ Transportation

Project Type(s): (mark all that apply)

___	Capital project	X	Repair and Rehabilitation	___	Emergency operation

Project Component(s): (mark all that apply)

x	Drainage deficiency mitigation: regional/local	___	Reservoir and basin sediment clean out and management	___	Aesthetic improvement
x	Urban runoff and stormwater quality	___	Recreational opportunity	___	Open space/habitat enhancement
___	Stormwater conservation/recharge	___	Water supply development/enhancement	___	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	___	Groundwater resource management
x	Pavement technology	x	Road construction/maintenance	___	Solid waste
___	others	___		___	

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	___	Bridges
x	Flood control systems (all major and appurtenant facilities)	___	Spreading grounds	___	Seawater barriers
___	Drinking water infrastructure	x	Streets and highways	___	Street lighting
x	Traffic signals	x	Transit	x	Urban runoff /Stormwater quality BMP
___	Others	___		___	

EXECUTIVE SUMMARY

During the formation of the Los Angeles County Flood Control District (LACFCD), the portion of the Antelope Valley north of Avenue S was excluded due to the rural nature of the high-desert area, the lack of appreciable potential benefit, and the historically minimal amount of flood-related damage. The northern boundary of the LACFCD, therefore, coincides with Avenue S in the Antelope Valley and is approximately 18 miles south of the northern County line. Runoff generated in the Antelope Valley generally flows north and east toward the dry-lake bed at Edwards Air Force Base. This area of the Antelope Valley is now made up of the Cities of Palmdale and Lancaster as well as large portions of unincorporated territory. Development of the area has increased rapidly since the 1980s with a current population of approximately 400,000. This development has aggravated the amount and frequency of stormwater runoff and urban runoff and has created a need for a drainage system to minimize damage from flooding in the unincorporated areas that are outside of the LACFCD.

The project was rated using the Envision sustainability rating system and scored 227 out of a possible 742 points. A breakdown of the score, by category, is shown below:

Category	Points Scored	Maximum Possible Score
Quality of Life	70	155
Leadership	77	121
Resource Allocation	6	182
Natural World	49	168
Climate and Risk	25	116
Total	227	742

BACKGROUND

In response to the need for flood protection, the Board of Supervisors created an Antelope Valley Comprehensive Plan of Flood Control and Water Conservation in 1987, wherein fees from new development would be collected and put aside to pay for the construction of storm drain systems where needed in the Antelope Valley. Concurrently, several attempts to form a new district or annex the area into the existing LACFCD have failed.

To construct the proposed drain, Watershed Management Division recommends that DES reassess the original 2005 draft Project Design and estimate and prepare a PDC that includes a revised engineer's estimate and most cost-effective alternative. Project Management Division II would be assigned to oversee the design and construction of the project, and once completed the project would be maintained by Flood Maintenance Division (FMD) under contract.

While construction funds would be provided by Supervisorial District 5 (SD) and the Antelope Valley Comprehensive Plan, funding for future maintenance of the system would need to be self-assessed by the property owners through an assessment district special election. Drainage from the four existing DBAA amenities should be collected by the Quartz Hill Storm Drain, therefore, including them in the larger assessment district and eliminating their current assessments. Information about the assessment district and the election would be conveyed to the property owners through a number of community meetings. The amount of the fees for each property owner should be much less than those estimated in the 2005 election, and a current estimate of proposed fees would be determined from an annual maintenance estimate prepared by FMD. A special election would be held to indicate whether the property owners will agree to pay this fee for the drain. If the creation of an assessment district is rejected in the special election, the drain will not be constructed.

PROJECT DESCRIPTION

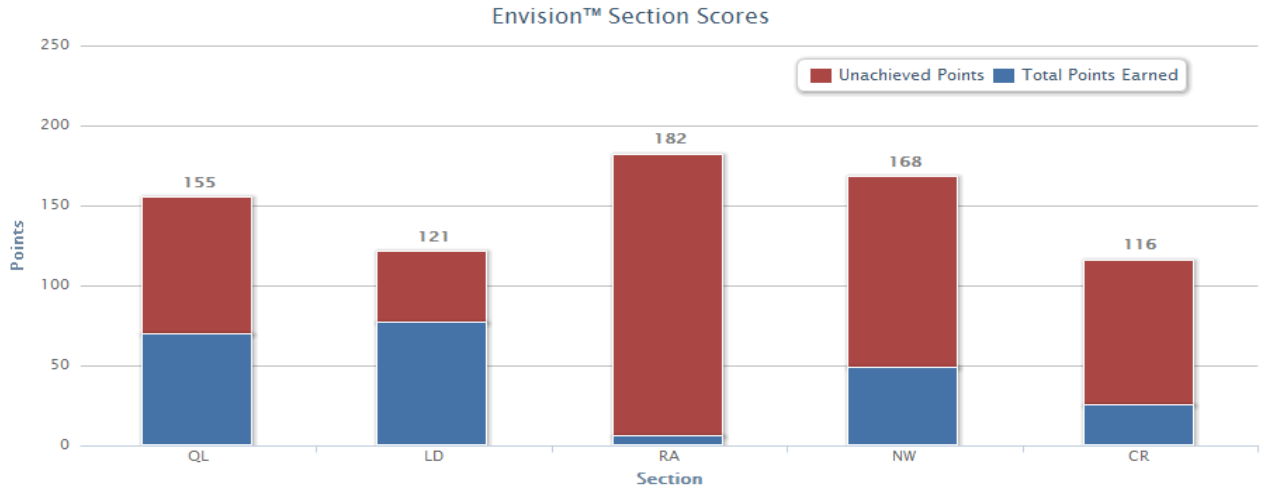
The project is located within the Los Angeles County unincorporated community of Quartz Hill, SD 5. It involves the construction of a storm drain system consisting of a mainline and five (5) laterals. The mainline consists of approximately 5,900 linear feet of reinforced concrete pipe (RCP) ranging in size from 66 inch to 87 inch in diameter and 4,700 linear feet of 87 inch diameter cast-in-place concrete pipe. The M-4 Lateral consists of approximately 1,800 linear feet of RCP ranging in size from 36 inch to 54 inch in diameter. The 50th Street Lateral consists of approximately 1,500 linear feet, the M Lateral consists of approximately 600 linear feet, and the L-4 Lateral consists of approximately 1,200 linear feet of 24 inch diameter RCP. The M-8 Lateral consists of approximately 900 linear feet of 36 inch diameter RCP. The system will be designed for a 10-year frequency design storm with a peak outflow rate of 644 cubic feet per second. The mainline will connect to an existing City of Lancaster drain, which has sufficient capacity to accept the flows.
The project also proposes to resurface about 3 miles of existing pavement with the recycled asphalt pavement.

ANALYSIS OF RATING RESULTS

Overall, the project scored 227 out of a possible 742 points. Below is a chart and graph of the rating results from the Envision rating system. A discussion of each of the rating category follows thereafter.

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	155	69	1	70
LD	121	76	1	77
RA	182	6	0	6
NW	168	49	0	49
CR	116	25	0	25
Total Project Points	**742**	**225**	**2**	227



Quality of Life

The proposed project scored 70 out of a possible 155 in the Quality of Life category. The project addresses drainage deficiencies by providing necessary 10-year frequency flood protection. It also eliminates the need to pump retention basins during the dry seasons. With less flooding, the community productivity and attractiveness will also be improved. The existing detention basins will no longer be needed for flood control purposes. Since these retention basins are no longer necessary and these can be developed into future public space. Also, with reduction of flooding parks will be accessible year round. In addition as a result of the completed project, site accessibility and way finding will also improve since the project includes resurfacing of the existing pavement and installation of new reflectorized signing and striping.

Leadership

The project scored 77 out of a possible 121 points in the Leadership category. At an organizational level, sustainability is one of the Values in the Department's strategic plan. At a project team level, the team is committed to evaluating sustainability through the Envision rating system. There is also plenty of opportunity for stakeholder feedback and involvement. Coordination meetings with affected private and public agencies, such as the Cities of Lancaster and Palmdale have taken place. Additionally, project managers have been involved with all the activities related to this project during design and at construction phase of this project.

The project provides improved infrastructure integration by eliminating the use of existing retention basins and replacing the need for flood control, with the use of reinforced concrete pipes. The result in an overall improvement in infrastructure reduces operational expenses.

Resource Allocation

The project scored 6 out of a possible 182 points in the Resource Allocation category. A life cycle energy assessment will not be conducted as part of the project design, so we were unable to obtain points associated with reducing the net embodied energy of the project. Also, our project specifications typically do not include a requirement for obtaining materials and equipment from suppliers who implement sustainable practices. The use of recycled or regional materials to minimize transportation costs and impacts will also not be strict requirement in the project specifications. Also, we were unable to obtain points for commissioning an energy system because there is no energy systems associated with the project. We were able to obtain points for protecting fresh water availability because the project requires minimal usage of freshwater.

Natural World

The project scored 49 out of a possible 168 points in the Natural World category. Four items were excluded in our rating because they did not apply to the project. These were the items associated with farmland, adverse geology, pesticide and fertilizer impacts, and development on steep slopes. The project is completely outside of greenfields and provides neighborhood revitalization, restores drainage ways, positively impacts the inhabitants, and make use of existing drainage infrastructure to reduce impacts. Because the project involves installation of a new storm drain system within the existing road right of way, the project avoids work on land that has been identified as a high ecological value or as having species of high value. The project also provides protection of the adjacent sites.

Climate and Risk

The project scored the least points 25 out of a possible 116 in the Climate and Risk category. This is mainly due to the fact that the rating system requires certain studies to qualify for the points. These studies include a carbon life cycle analysis to estimate greenhouse gas emissions and a climate impact assessment to assess climate threat. These studies are typically not conducted for a road and drainage project such as this one. The project provides infrastructure to alleviate the current flooding situations (10-year storm frequency flood protection) and includes consideration for changes and growth in the area affected.

Possible Project Improvements to Increase Sustainability

Some possible improvements or changes to the project that could be made to make the project a more sustainable infrastructure project include the following:

- Studies could be conducted to determine if more recycled or reused materials could be utilized in construction of the project.
- The project bid package could be modified to include an incentive or requirement to hire locally.
- Pervious concrete or pavement could be utilized to decrease storm water runoff and increase groundwater infiltration.
- Bioswales are included as part of the project. Those areas could potentially be enlarged to create small pocket parks or mini recreational facilities.
- Carbon lifecycle analysis and climate studies could be conducted to determine measures to reduce greenhouse gas emissions and assess climate threat.

Overall critique of the Envision Rating System

The one size fits all philosophy of the Envision sustainability rating system may not accurately assess the sustainability of the majority of projects here at DPW. The system appears to favor larger and/or more comprehensive multibenefit infrastructure projects. There are several items or questions that are not applicable to a standard road or drainage project. These items relate to light pollution, existing regulations and policies, energy systems, and climate changes. Additionally, drainage projects typically require deep excavation and would net into excess dirt, which require hauling offsite.

Oxford Retention Basin Multiuse Enhancement

Core Service Area: Water Resources

Project Title: Oxford Retention Basin Multiuse Enhancement Project

Author(s) and Division(s): Joseph Li – DES, Hector Bordas – FMD, Charles Chen - DES

Partnering Agencies: Los Angeles County Department of Beaches and Harbor

Project Category(s): (mark all that apply)

_X_	Multibenefit	_ _ _	Water Supply	___	Flood Control/ Stormwater Capture	___	Waste Management	___	Road/ Transportation

Project Type(s): (mark all that apply)

_X_	Capital project	_X_	Repair and Rehabilitation	____	Emergency operation

Project Component(s): (mark all that apply)

_X_	Drainage deficiency mitigation: regional/local	_X_	Reservoir and basin sediment clean out and management	_X_	Aesthetic improvement
_X_	Urban runoff and stormwater quality	_X_	Recreational opportunity	_X_	Open space/habitat enhancement
____	Stormwater conservation/recharge	____	Water supply development/enhancement	____	Drinking water quality management
____	Recycled/reclaimed water	____	Desalination	____	Groundwater resource management
____	Pavement technology	____	Road construction / maintenance	____	Solid waste
____	Others: Bridge Replacement	____		____	

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	___	Bridges
_X_	Flood control systems (all major and appurtenant facilities)	___	Spreading grounds	___	Seawater barriers
___	Drinking water infrastructure	___	Streets and highways	___	Street lighting
___	Traffic signals	___	Transit	_X_	Urban runoff /Stormwater quality BMP
___	Others	___		___	

EXECUTIVE SUMMARY

Oxford Retention Basin Multiuse Enhancement Project is located in Marina Del Rey area of the County of Los Angeles adjacent to the marina and surrounded by residential development. The approximately 10.7 acre basin currently operates as a flood control retention basin with restricted public access to the site. Two major storm drains outlet into the basin. Water levels of the basin are influenced by tides from the harbor and stormwater runoff from the storm drains. Currently, the operation of the tide gates manages the fluctuations in the water levels at various conditions. Local flooding issues and sediment buildup in the basin initiated the project to improve basin operations and maintenance. The project has evolved into a Multiuse Enhancement Project with stakeholder and community involvement and input.

The project currently consists of the following enhancements to the site: increase basin capacity, improve water quality, preserve native habitat, and allow public access for passive recreation.

The project was rated using the Envision Sustainability Rating System and scored 438 out of a possible 768 points. A breakdown of the score, by category, is shown below:

Category	Points Scored	Maximum Possible Score
Quality of Life	126	181
Leadership	82	106
Resource Allocation	33	182
Natural World	140	177
Climate and Risk	57	122
Total	438	768

The project scored the highest in the Quality of Life, Leadership, and Natural World categories. Improving the water quality and flood protection, connecting the community with walking trails, and restoring native habitat all contribute to the betterment to the quality of life for local residents. DPW's commitment to community and stakeholder outreach and input demonstrates strong leadership and stewardship that were integral in providing project plans that met the needs of the community. The improved flood protection and restoration of native habitat contributed to the natural world category score. Resource Allocation and Climate and Risk categories scored relatively low in the Envision rating system. Climate assessments and life cycle carbon analysis are not typically performed for DPW projects.

The Oxford Retention Basin Multiuse Project scored 438 out of 768 or 57 percent. The score is higher than the typical DPW project due to the incorporation of a multitude of sustainable components. Unfortunately, in order for the project to score much higher, DPW will have to implement a change in design standards and specifications. Specifications may state that the Contractor must support sustainable procurement practices, use recycled materials, and use

regional materials. DPW may perform a life cycle energy, carbon, and climate impact assessments on these types of projects. All these are achievable, but may be cost prohibitive when taken into consideration.

BACKGROUND

The Project is located at Oxford Retention Basin, a flood control facility operated by the Los Angeles County Flood Control District (LACFCD), one block from the harbor/marina in the unincorporated area of Marina Del Rey.

The Oxford basin site occupies an area of approximately 10.7 acres and currently has a large retention pond that is inundated year-round with urban and stormwater runoff, high groundwater, and tidal inflows from the harbor. Washington Boulevard, Admiralty Way, parking lot, and an existing bicycle path surround the property. Oxford Basin currently lacks recreational amenities and has little aesthetic appeal. A 10-foot-high chain link fence encloses the facility and prevents public access. Nonnative species plants and trees are scattered along the embankment of the basin

Since the construction of the basin in 1965, it has never been dredged or cleared of sediment deposit along the bottom. Sediment deposit has reduced the capacity of the basin for its flood control purposes. Removal of sediment from the bottom of the basin is needed to restore basin capacity. A short parapet wall is proposed along Washington Boulevard to provide added flood protection for the street.

The area stakeholders and residential community neighboring Oxford basin expressed a strong desire to add recreational and aesthetic enhancements to the area surrounding the basin. The project shall include community friendly amenities such as observation decks, walking paths, and restoration of natural habitat and improved basin water quality.

PROJECT DESCRIPTION

The Project will mitigate localized flooding, address water quality deficiencies, enhance native habitat, improve site aesthetics, and provide passive recreation features. The proposed improvements will reassure the community of any future flooding along Washington Boulevard and Oxford Avenue. The project will significantly revitalize the area around the retention basin by providing public access with the addition of walking paths, observation decks, and shorter ornamental fencing for public safety.

The proposed project consists of the following elements:

- Excavate approximately 2,700 cubic yards (CY) of accumulated sediment along the bottom of Oxford Basin to restore basin capacity.
- Construct parapet wall along Washington Boulevard to enhance flood protection for the street.
- Construct berm between the two tide gates and reprogramming operations to improve water circulation in the basin.
- Install trash BMPs (trash nets) at the storm drain outlets to remove gross solids from urban and storm water runoff.
- Construct an 8-foot-wide decomposed granite (DG) walking trail with wildlife friendly lighting around the perimeter of Oxford Basin. Replace the existing sidewalk along Admiralty Way with landscaped parkway and integrated with the proposed walking trail.
- Install 4-foot-high ornamental steel fence around the perimeter of the basin for public safety.
- Remove existing nonnative vegetation and approximately 6,200 CY of contaminated soils and restore with drought tolerant native plants and clean imported fill.
- Construct six observation areas along the walking path with park benches to overlook the basin.
- Install interpretive signage at the observation decks and along the walking path to educate the community about stormwater pollution prevention measures, native plants, and area wildlife.

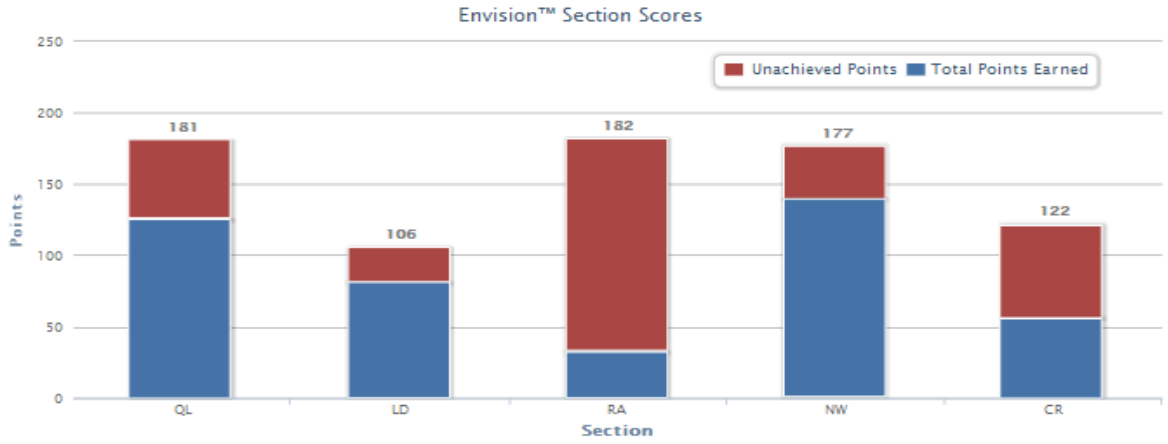
The Oxford Retention Basin Multiuse Project is funded by the LACFCD and SD 4. The project is scheduled to start construction in late 2013 at an estimated construction cost of $6.5 million.

ANALYSIS OF RESULTS

The project scored 438 out of a possible 768 points or 57 percent. Attached below is the table summary and graph from the Envision rating System. A discussion of the categories will follow thereafter.

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	181	121	5	126
LD	106	79	3	82
RA	182	30	3	33
NW	177	135	5	140
CR	122	54	3	57
Total Project Points	**768**	**419**	**19**	438



Quality of Life (127 out of 181)

The proposed project scored relatively high in the Quality of Life category. The surrounding community will benefit greatly with the proposed project. The restoration of the basin ecology and water quality will enhance the aesthetics of the site. Allowing public access with the construction of walking paths and observation decks will improve site accessibility and passive recreation for the community. Educational signage of the basin functions and restored native habitat will further enhance community linkage with the project site.

Leadership (82 out of 106)

DPW provided superior leadership and stewardship for the project's progress. Community and stakeholder outreach and input resulted in the scope modification of the original project. Meetings with the community, stakeholders, and affected agencies provided DPW with goals to enhance the project with the public interest in mind. Public access to the site and the restoration of native habitat were successful byproducts of their input. The Oxford Basin Enhancement Project is one of several projects within the Marina Del Rey master plan for

improvements in the area. Extensive coordination and collaboration between the Project Engineers and Managers was accomplished to manage these improvement projects in order to achieve optimal and consistent workflow free of redundancies.

Resource Allocation (33 out of 182)

The score for Resource Allocation category was low mainly due to DPW policy and standard practices for design. For example, DPW standard contract specifications do not specify for Contractors to use regional materials, recycle their byproducts, or use products from manufacturers' that support sustainable practices. However, the Project Engineer may consider these in the Special Provisions for the project. DPW do not commission or monitor energy systems nor perform net embodied energy study as these may be cost prohibitive.

Natural World (140 out of 177)

The project scored highest in this category mainly because the project involves the restoration of a native habitat and water body within the site. In addition, the flood protection function and water quality will be enhanced with the removal of contaminated sediment from the basin. The reprogramming of the tide gates operation will provide an efficient management of stormwater runoff and tidal fluctuations of surface water from the marina. Increase water circulation promotes improve water quality and provides a healthier habitat for avian species and native plants.

Climate and Risk (57 out of 122)

The project scored relatively low for the Climate and Risk category. Comprehensive life cycle carbon analysis and climate impact assessment plan are not typical in DPW's infrastructure projects. These tasks may be considered, but are probably cost prohibitive and provide no significant changes to the project. The basin improvements include the restoration of flood protection to a 50-year storm event. The increase of basin capacity addresses and mitigates local area flooding issues. The tidal gates can also be used to isolate the basin from the harbor in case of manmade hazards such as spills.

Possible Project Improvements to Increase Sustainability

Some possible improvements or changes to the project that could be made to make the project a more sustainable infrastructure project include the following:

- Use renewable energy source by installing solar lighting for the walking path.
- Use recycled water to irrigate native plants during establishment period.
- Include clauses in the contract special provisions for the use of recycled material, regional material.

- Construct bioswales on the parkway along Admiralty Way.
- Modify project bid package to include an incentive or requirement to hire locally.
- Conduct carbon life cycle analysis and climate impact studies to determine measures to reduce greenhouse gas emissions and assess climate threat.

Overall critique of the Envision Rating System

Oxford Retention Basin Multiuse Enhancement Project touches on all five categories of the Envision rating system. Unlike most of DPW's typical single faceted projects such as road rehabilitation or storm drain construction, the Envision rating system favors the large multibenefit infrastructure projects. While the project scored relatively high as compared to our typical DPW project, much higher scores cannot be attained unless changes to DPW policy and design standards are modified to include sustainable elements such as performing climate impact and life cycle carbon assessments, using recycled materials, or employing local workforce. The Envision rating system does provide the Project Engineer and Project Manager with tools and guidance on sustainability issues to consider during the preliminary stages of the Project Design Concept.

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Pacoima Spreading Grounds Enhancement

Core Service Area: Water Resources

Project Title: Pacoima Spreading Grounds Enhancement Project

Author(s) and Division(s): Jack Husted – WRD, TJ Kim – WWD, Joe Li- DES, Charles Chen - DES

Partnering Agencies: City of Los Angeles Department of Water and Power

Project Category(s): (mark all that apply)

___	Multibenefit	_X_	Water Supply	___	Flood Control/ Stormwater Capture	___	Waste Management	___	Road/ Transportation

Project Type(s): (mark all that apply)

___	Capital project	_x_	Repair and Rehabilitation	___	Emergency operation

Project Component(s): (mark all that apply)

_x_	Drainage deficiency mitigation: regional/local	_x_	Reservoir and basin sediment clean out and management	_x__	Aesthetic improvement
_x_	Urban runoff and stormwater quality	_x_	Recreational opportunity	_x__	Open space/habitat enhancement
_x_	Stormwater conservation/recharge	_x__	Water supply development/enhancement	___	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	_x__	Groundwater resource management
___	Pavement technology	__	Road construction / maintenance	___	Solid waste
___	Others: Bridge Replacement	___		___	

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	__	Bridges
_X_	Flood control systems (all major and appurtenant facilities)	_X	Spreading grounds	___	Seawater barriers
___	Drinking water infrastructure	__	Streets and highways	__	Street lighting
__	Traffic signals	___	Transit	___	Urban runoff/Stormwater quality BMP
___	Others	___		___	

EXECUTIVE SUMMARY

Pacoima Spreading Grounds is located in the City of Los Angeles near the intersection of Paxton and Arleta Streets on the west side of Pacoima Diversion Channel. The 169 acre facility consists of 12 large shallow basins and has a storage capacity of 530 acre-feet (AF). The facility is one of the major water conservation facilities that recharge the San Fernando Basin.

The proposed improvements will increase the storage capacity and simplify operations by combining basins and constructing new interbasin structures. The recharge basins will be reconfigured and deepened. The radial gate will be replaced with a rubber dam that can operate during higher flows. The improved intake will convey an intake flow rate of 600 cfs and eliminate flooding at Arleta Avenue. The existing concrete intake canal will be replaced with four 54-inch diameter reinforced concrete pipes (RCP). The area will be backfilled to create an area for future recreational or habitat enhancement opportunities.

The project was rated using the Envision sustainability rating system and scored 350 out of a possible 736 points. A breakdown of the score, by category, is shown below:

Category	Points Scored	Maximum Possible Score
Quality of Life	78	181
Leadership	54	106
Resource Allocation	47	151
Natural World	118	182
Climate and Risk	53	116
Total	350	736

The project scored the highest in the Natural World category because its restoration of stormwater and preserving the existing habit within the spreading grounds. The project scored the lowest in the Resource Allocation category because certain studies such as carbon life cycle analysis and climate impact assessments are not typically conducted as part of a spreading grounds project.

Improvements that could be made to increase the sustainability of the project include the use of recycled materials, pervious concrete and pavement, requiring the contractor to hire or obtain materials locally.

BACKGROUND

The Project is located at Pacoima Spreading Grounds, a major water conservation facility operated by the LACFCD, near the intersection of Paxton and Arleta Streets on the west side of Pacoima Diversion Channel.

The water conserved at Pacoima Spreading Grounds is supplied by storm flows and controlled releases from Pacoima Dam, partially controlled flow from Lopez Basin, and uncontrolled flows from East Canyon and Pacoima Wash. Water is diverted from Pacoima Wash into the spreading grounds utilizing a radial gate, and then the water flows through the intake canal to the spreading basins.

This project will increase the storage capacity of the grounds from 530 to 1,197 AF by deepening and combining basins. Operational efficiency will be enhanced with the new interbasin structures and facility layout. The percolation is expected to increase from 65 to 142 cfs as a result of the clay removal. The improvements are estimated to conserve an additional 10,500 AF of water per wet year.

PROJECT DESCRIPTION

The Project will mitigate localized flooding, enhance native habitat, improve the site's aesthetics, and provide space for future passive recreation features.

The proposed improvements would reassure the community of any future flooding along Arleta Street. The project would provide future open space project north of Arleta Street as well as bike trails through the spreading grounds.

The proposed project consists of the following elements:

- Excavation of approximately 1,370,000 cubic yards (CY) of material to increase the spreading grounds capacity. The excavated material will be disposed at the local site.
- Construction of a new intake system that will replace the open concrete channel and create an area for future recreational or habitat enhancement opportunity.
- Replace the radial gate with a rubber dam system.
- Installation of an irrigation system to establish the new native plants.

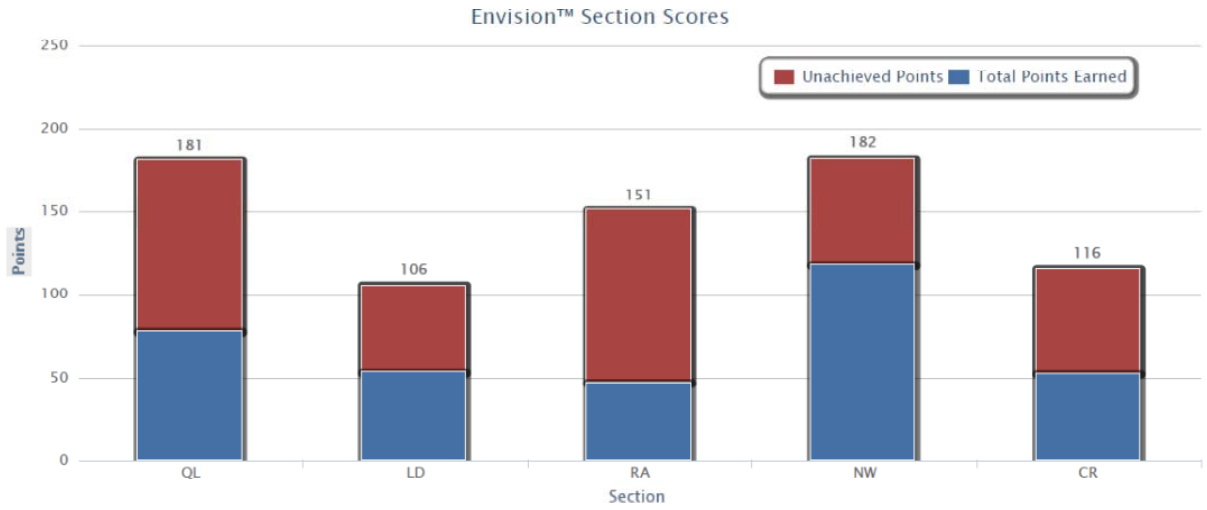
The project is currently not funded for construction; there have been discussions with City of Los Angeles Department of Water and Power (DWP) for cost sharing opportunities.

ANALYSIS OF RATING RESULTS

Overall, the project scored 350 out of a possible 736 points. Below is a chart and graph of the rating results from the Envision rating system. A discussion of each of the rating category follows thereafter.

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	181	74	4	78
LD	106	54	0	54
RA	151	43	4	47
NW	182	112	6	118
CR	116	51	2	53
Total Project Points	**736**	**334**	**16**	350



Quality of Life (78 out of 181)

The proposed project scored fair in the Quality of Life category. The replacement of the open channel north of Arelta Avenue with an open field will provide future park space and create new habitat. The potential to add bike trails crossing the spreading grounds will also encourage alternative modes of transportation and eases traffic congestion. Additionally, educational signage will inform the public about the project and LID features further enhancing the community to the project site.

Leadership (54 out of 106)

The project scored fair in the Leadership category. At an organizational level, sustainability is one of the Values in the Department's strategic plan. At a project team level, the team is committed to evaluating sustainability through the Envision rating system; however, there is no clear direction or indication yet on whether funding managers are willing to fund project enhancements to achieve increased sustainability. There is also plenty of opportunity for stakeholder feedback and involvement. Coordination meetings with affected private and public agencies, such as the City of Los Angeles will take place. Additionally, an environmental document will be prepared for public review and community meetings will be held.

Resource Allocation (47 out of 151)

The project scored relatively low in the Resource Allocation category mainly due to DPW policy and standard practices for design. Typically, a life cycle energy assessment will not be conducted as part of the project design, so, we were unable to obtain points associated with reducing the net embodied energy of the project. Also, our project specifications typically do not include a requirement for obtaining materials and equipment from suppliers who implement sustainable practices. The use of recycled or regional materials to minimize transportation costs and impacts will also not be strict requirement in the project specifications. However, we were able to obtain points for protecting fresh water availability by increasing the spreading grounds capacity.

Natural World (118 out of 182)

The project scored highest in this category because the project involves managing stormwater by increasing the infiltration of the spreading grounds and restoration of species and habitat. The conversion of the open channel to a larger open area will provide additional habitat space. Additionally, the project is preserving greenfields because 100 percent of the project is located within spreading grounds right-of-way.

Climate and Risk (53 out of 116)

The project scored fair in the Climate and Risk category. This is mainly due to the fact that the rating system requires certain studies to qualify for the points. These studies include a carbon life cycle analysis to estimate greenhouse gas emissions and a climate impact assessment to assess climate threat. These studies are typically not conducted for a spreading grounds enhancement project. The increase of capacity of the spreading grounds does account for potential climate change and future potential flooding scenarios.

Possible Project Improvements to Increase Sustainability

Some possible improvements or changes to the project that could be made to make the project a more sustainable infrastructure project include the following:

- Studies could be conducted to determine if more recycled or reused materials could be utilized in construction of the project.
- The project bid package could be modified to include an incentive or requirement to hire locally.
- Pervious concrete or pavement could be utilized to decrease storm water runoff and increase groundwater infiltration along access roads around the spreading grounds.
- Carbon life cycle analysis and climate studies could be conducted to determine measures to reduce greenhouse gas emissions and assess climate threat.
- Use of recycled water to irrigate native plants during establishment period.

Overall critique of the Envision Rating System

Pacoima Spreading Grounds Enhancement Project touches on all five categories of the Envision rating system. Unlike most of DPW's typical single faceted projects such as road rehabilitation or storm drain construction, the Envision rating system favors the large multibenefit infrastructure projects. While the project scored relatively high as compared to our typical DPW project, much higher scores cannot be attained unless changes to DPW policy and design standards are modified to include sustainable elements such as performing climate impact and life cycle carbon assessments, using recycled materials, or employing local workforce. The Envision rating system does provide the Project Engineer and Project Manager with tools and guidance on sustainability issues to consider during the preliminary stages of the project design concept.

Strathern Pit Multiuse

Core Service Area: Water Resources

Project Title: Strathern Pit Multiuse Project

Author(s) and Division(s): Joseph Li – DES, Youn Sim – WMD, William Honda - PMD, Margaret Terrell -Des

Partnering Agencies: City of Los Angeles

Project Category(s): (mark all that apply)

_X_	Multibenefit	_ _	Water Supply	___	Flood Control/ Stormwater Capture	___	Waste Management	___	Road/ Transportation

Project Type(s): (mark all that apply)

_X_	Capital project	___	Repair and Rehabilitation	____	Emergency operation

Project Component(s): (mark all that apply)

_X_	Drainage deficiency mitigation: regional/local	_X_	Reservoir and basin sediment clean out and management	_X_	Aesthetic improvement
_X_	Urban runoff and stormwater quality	_X_	Recreational opportunity	_X_	Open space/habitat enhancement
_X_	Stormwater conservation/recharge	____	Water supply development/enhancement	____	Drinking water quality management
_X_	Recycled/reclaimed water	____	Desalination	_X_	Groundwater resource management
____	Pavement technology	_X_	Road construction / maintenance	____	Solid waste
___	Others: Bridge Replacement	____		____	

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	___	Bridges
_X_	Flood control systems (all major and appurtenant facilities)	___	Spreading grounds	___	Seawater barriers
___	Drinking water infrastructure	___	Streets and highways	___	Street lighting
___	Traffic signals	___	Transit	_X_	Urban runoff/Stormwater quality BMP
___	Others	___		___	

EXECUTIVE SUMMARY

Strathern Pit Wetland Project is located in the Sun Valley community of the City of Los Angeles. The approximately 21 acre project site is currently owned by the LACFCD. Due to urban development in the Sun Valley Watershed, flooding occurs frequently in the surrounding local streets during rain events. The LACFCD planned to mitigate the flooding by proposing a storm drain that would have channeled the storm runoff flows to Tujunga Wash. But, in the mid-1990s, DPW developed a new strategic water management plan for the Sun Valley Watershed to retain the storm runoff by storing and infiltrating at local sites. Plan implementation includes the construction of several Sun Valley projects that would collaboratively manage the watershed storm flows. The proposed Strathern Pit project was a cornerstone of the plan to detain the stormwater flows at the downstream end of the watershed. However, with active community and stakeholder participation and input, the Strathern Pit Project evolved from purely a flood control detention facility to a community friendly multiuse public space with sustainable components.

The proposed Strathern Pit Project will comprise of three primary components: flood control protection with detention basins, stormwater treatment with wetlands, and recreation for the community with public park space. The concrete lined detention basins are designed to store 385 acre-ft of storm runoff or a 10-year frequency storm in the local watershed. The diversion of stormwater flows will alleviate street flooding during the majority of storm events. The wetland will typically treat 5 cubic feet per second (cfs) to a maximum of 35 cfs for overflow conditions from the detention basins. The treated water from the wetland will be conveyed downstream to existing underground infiltration basins at the Sun Valley Park Project (constructed 2005). The majority of the Strathern Pit site will be open for public use. A park will occupy the eastern half of the site. The park offers open green space, basketball and tennis courts, and walking paths for the public's enjoyment. Native landscaping, lighting, and educational signage will be included throughout the site:

The project was rated using the Envision sustainability rating system and scored 418 out of a possible 742 points. A breakdown of the score, by category, is shown below:

Category	Points Scored	Maximum Possible Score
Quality of Life	108	166
Leadership	77	106
Resource Allocation	49	171
Natural World	126	177
Climate and Risk	58	122
Total	418	742

The project scored the highest in the Quality of Life, Leadership, and Natural World categories. The transformation of an existing landfill into usable public space with a flood protection

component greatly enhances the quality of life for the local community. DPW demonstrated strong leadership and commitment to the project by first, purchasing the land, then developing a coherent sustainable design that met the needs of the community and stakeholders. The stormwater detention, wetland treatment, and water conservation aspects contributed to the high score in the natural world category. The Resource Allocation and Climate and Risk categories scored relatively low in the Envision rating system. Climate assessments and life cycle carbon analysis are not typically performed for DPW projects.

The Strathern Pit Wetlands Project scored 488 out of 742 or 56 percent. The score is higher than the typical DPW project due to the incorporation of major sustainable components such as habitat restoration, water treatment, and conservation.

BACKGROUND

Strathern Pit is located at the northeast corner of Strathern Street and Tujunga Avenue in the Sun Valley community of the City of Los Angeles. The area around the 21 acre project site is currently not serviced by any storm drains. Local street flooding is common during storm events. The Sun Valley area also lacked recreational space for the local community.

A Sun Valley Watershed Water Management Plan was developed by DPW in the mid-1990s. The objective for the Sun Valley Water Management Strategy involves retaining the storm runoff in the watershed, increasing water conservation, recreational opportunities and wildlife habitat, and reducing storm water pollution. DPW worked with community stakeholder groups to develop a more sustainable design to mitigate flooding as well as offer recreational opportunities for the community. The result was the development of the Strathern Wetlands Park Project. It is a critical component in a series of projects that operates collaboratively to address flooding and water-quality issues in the Sun Valley Watershed. The project proposes public access to the site with a public park and walking trails, which would also resolve the needs for recreational space for the local residents.

The Strathern Pit site was purchased in 2005 at a cost of $28 million by the LACFCD. The Project Design Concept for the multiuse Strathern Wetlands Park Project was completed in 2011. Construction is anticipated for summer of 2014 at an estimated cost of $38 million.

PROJECT DESCRIPTION

The Project will provide significant positive impact to the local community. The Project will mitigate localized flooding, address water quality and conservation measures, improve site aesthetics, and provide recreational opportunities for local residents. The concrete lined detention basins is designed to accommodate the stormwater storage capacity equivalent to a 10-year storm event. Surface storm water flows on Tujunga Avenue will be channeled underground and diverted to the detention basins for storage. Approximately 5 cfs (typical

condition) to 35 cfs (overflow condition) of stormwater will then be pumped from the basins to the wetland treatment prior to conveyance to the existing chambers at Sun Valley Park for ground infiltration. The project will also accommodate the local community residents with much needed recreational public space.

The proposed project includes the following elements:

- Construct concrete-lined detention basins with a storage capacity of 385 acre-ft.
- Construct meandering wetlands for stormwater treatment.
- Construct control facility to house pumps to convey 5 cfs to 35 cfs from the detention basins to the wetlands and from wetlands to existing infiltration chambers at Sun Valley Park
- Construct park with open green space with native landscaping, basketball courts, tennis courts, restrooms, and small office.
- Construct walking paths with wildlife-friendly lighting throughout the project site.
- Install 4-foot-high ornamental steel fence around the perimeter of the basins for public safety.
- Grade project site per the design plans for basins, wetlands, and park.
- Recycled water line will provide water for irrigation of the park area.
- Create native habitat with drought tolerant native plants for park landscape.
- Install interpretive signage at various locations of the site for educational purposes.

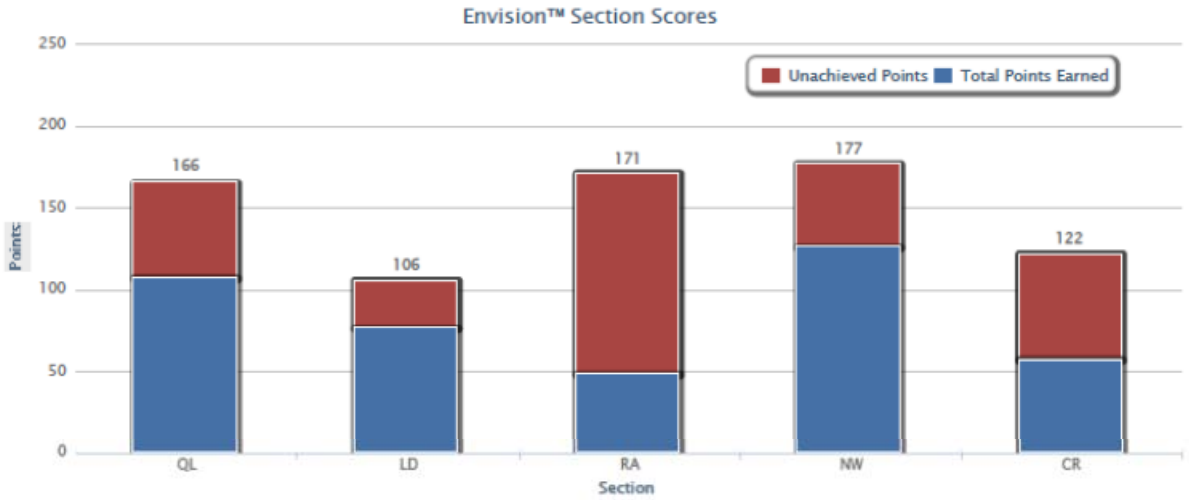
The Strathern Pit Wetlands Project is funded by the LACFCD. The project is scheduled to start construction in summer 2014 at an estimated construction cost of $38 million.

ANALYSIS OF RESULTS

The project scored 418 out of a possible 742 points or 56percent. Attached below is the table summary and graph from the Envision rating System. A discussion of the categories will follow thereafter.

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	166	103	5	108
LD	106	73	4	77
RA	171	46	3	49
NW	177	121	5	126
CR	122	56	2	58
Total Project Points	**742**	**399**	**19**	418



Quality of Life (108 out of 166)

The proposed project scored high in the Quality of Life category. The transformation of an inert landfill to a flood control facility, wetland, and park greatly benefits the local community at many levels. The project virtually eliminates the local street flooding, which enhances public safety and health issues and provides much needed public space for active and passive recreation. The proposed project will require significant maintenance, which could provide local jobs.

Leadership (77 out of 106)

DPW provided superior leadership and coordination for developing the Sun Valley Watershed Management Plan. For Strathern Pit Wetlands Project, community and stakeholder involvement and input resulted in a transformative project that met the needs of the LACFCD,

local residents, and businesses. The project integrates with other Sun Valley Watershed Projects such as Sun Valley Park and Tuxford Drain to manage stormwater flows, improve water quality, and provide water conservation. Sustainability is one of the core values for DPW to design innovative projects such as for Strathern Pit Wetlands Projects.

Resource Allocation (49 out of 171)

The score for Resource Allocation category was low mainly due to DPW policy and standard practices for design. For example, DPW standard contract specifications do not specify for Contractors to use regional materials, recycle their byproducts, or use products from manufacturers' that support sustainable practices. However, the Project Engineer may consider these provisions for the project in the final design specifications. DPW do not commission or monitor energy systems nor perform net embodied energy study as these may be cost prohibitive for a publicly funded infrastructure project.

Natural World (126 out of 177)

The Natural World category attained a high score mainly due to the restoration of floodplain functions and the effective management of stormwater. The construction of detention basins and wetland will store and treat stormwater respectively from the affected watershed area prior to ground infiltration. All these sustainable features were covered in the Natural World category. The project also restores native habitat to the project site where possible.

Climate and Risk (58 out of 122)

The project scored relatively low for the Climate and Risk category. Comprehensive life cycle carbon analysis and climate impact assessment plan are not typical in DPW's infrastructure projects. These tasks may be considered, but are probably cost prohibitive and provide no significant changes to the project. The detention basins will provide adequate flood protection for the surrounding community.

Possible Project Improvements to Increase Sustainability

Some possible improvements or changes to the project that could be made to make the project a more sustainable infrastructure project include the following:

- Use treated stormwater for drip irrigation of the native plants in the park area. However, during the nonrainy season, water may not be readily available in the basins for this purpose.

- Use renewable energy source by installing solar lighting for the walking paths and recreation courts.

- Modify project bid package to include an incentive or requirement to hire locally.
- Include clauses in the contract special provisions for the use of recycled material, regional material.
- Conduct carbon life cycle analysis and climate impact studies to determine measures to reduce greenhouse gas emissions and assess climate threat.

Overall critique of the Envision Rating System

The Envision rating system favors multibenefit infrastructure project such as Strathern Pit Wetlands Project. The Strathern Pit Wetlands Project touches on all five categories of the rating system. Even though the final score is relatively high compared to typical DPW infrastructure projects, I thought this project should score higher than the 56 percent. The score for these types of innovative multiuse projects may never attain much higher rating because some questions on the Environ Rating system will never apply to DPW projects.

The ISI Envision Rating System does provide the Project Engineer and manager with an awareness of the environmental aspects of the projects. Prior to ISI, the real focus of the design was the functionality and economic feasibility of the project. With the Envision Rating tool, new and different design ideas were introduced into the concept including specific elements that could be added to the design to make the project meet environmental and sustainable goals. A new mindset can be carried into the conceptual design of future projects.

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Big Tujunga Dam Sediment Removal

Core Service Area: Water Resources

Project Title: Big Tujunga Dam Sediment Removal Project

Author(s) and Division(s):

Jack Husted (Water Resources Division)

Dai Bui (Facilities Management)

David Chan (Design Division)

Abe Lopez (Design Division)

Partnering Agencies: (List all agencies participated including funding agencies)

Project Category(s): (mark all that apply)

___	Multibenefit	__ _	Water Supply	_X_	Flood Control/ Stormwater Capture	___	Waste Management	___	Road/ Transportation

Project Type(s): (mark all that apply)

__	Capital project	_X_	Repair and Rehabilitation	___	Emergency operation

Project Component(s): (mark all that apply)

___	Drainage deficiency mitigation: regional/local	_X_	Reservoir and basin sediment clean out and management	___	Aesthetic improvement
___	Urban runoff and stormwater quality	___	Recreational opportunity	___	Open space/habitat enhancement
_X_	Stormwater conservation/recharge	___	Water supply development/enhancement	___	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	___	Groundwater resource management
___	Pavement technology	___	Road construction/maintenance	___	Solid waste

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	___	Bridges
_X_	Flood control systems (all major and appurtenant facilities)	___	Spreading grounds	___	Seawater barriers
___	Drinking water infrastructure	___	Streets and highways	___	Street lighting
___	Traffic signals	___	Transit	___	Urban runoff /Stormwater quality BMP
___	Others	___		___	

EXECUTIVE SUMMARY

The Big Tujunga Dam Sediment Removal Project (Project) will restore the storage capacity of Big Tujunga Dam and Reservoir. The Project will excavate 4.4 million cubic yards of sediment from Big Tujunga Reservoir, to be placed in a previously established sediment placement site located just downstream of the dam. Sediment removal is necessary to maintain an acceptable level of flood protection.

The Project was rated in the Envision rating system with the following results.

Section	Points Earned	Maximum Possible Score
Quality of Life	29	127
Leadership	35	121
Resource Allocation	55	151
Natural World	119	188
Climate and Risk	51	116
Total	289	703

In the Project scored well in the Natural World section because of the water conservation and flood management benefits and for the use of native vegetation. There was limited opportunity for points in the Quality of Life Section because of the Project's remote location and limited direct interaction with the public. The aspects of hazard preparation and adaptability earned some points in the Climate and Risk section.

BACKGROUND

Big Tujunga Dam is located in the Angeles National Forest in the Upper Los Angeles River Watershed. The 200 foot tall dam was built in 1929 for flood control and water conservation purposes. In 2011 the dam was significantly upgraded, which included seismic rehabilitation, spillway modification, and electrical and mechanical upgrades. The dam is currently operable with no restrictions.

In 2009 the Station Fire (10th largest fire on record in California) burned approximately 87 percent of the watershed tributary to Big Tujunga Reservoir resulting in greater sediment and debris inflow and diminished capacity. A sediment removal project is now necessary for adequate flood protection and water conservation. Additionally, the dam is currently operated in cooperation with the U.S. Fish and Wildlife Service to control flow of water and support downstream habitat for an endangered fish species including the Santa Ana Sucker. Further sedimentation in the reservoir may negatively impact water quality and inhibit these releases.

PROJECT DESCRIPTION

The Project will remove 4.4 million cubic yards of sediment to restore the reservoir to its original design capacity of 6,240 acre-feet. Sediment will be removed using heavy equipment such as bulldozers, loaders, and scrapers. The sediment will then be placed in a previously established Sediment Placement site (SPS) located just downstream of the dam. The SPS will be vegetated with indigenous plants. The Project is currently in the concept phase, with either a

"Big Tujunga Dam Sediment Removal Project"

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	127	29	0	29
LD	121	35	0	35
RA	151	55	0	55
NW	188	119	0	119
CR	116	51	0	51
Total Project Points	**703**	**289**	**0**	289

conveyor belt system or low emission trucks being considered as feasible options for transporting sediment to the SPS. The project will include an environmental impact report, public review opportunities, and partnering with environmental agencies.

ANALYSIS OF RATING RESULTS

Quality of Life

The Project earned 29 out of 127 points in the Quality of Life section. There was limited opportunity for this project to achieve points in this section because the Project has minimal direct impact with the public; many items did not seem to apply. Enhancing public health and safety was a key aspect of the project, and earned some points in this section.

Leadership

The Project earned 35 out of 121 points for the Leadership section. Sustainability is a core value of the Department. The Department is actively planning for more sustainable sediment management. Stakeholder involvement included environmental agencies.

Resource Allocation

The Project earned 55 out of 151 points in the Resource Allocation section. Where applicable the plan will include reusing suitable material for aggregate and backfill. However, the majority of the sediment does not have marketable value, and the hauling distance would far exceed the benefit of reuse. Some required questions in this section were not applicable because few products are being purchased or installed. This resulted in zero points achieved.

Natural World

The Project scored best in the Natural World section with 119 out of 188 points. Many points were earned for the water conservation and flood management improvements. The Project is located near a critical habitat, but extensive planning efforts are being implemented to mittigate impacts to these areas. The SPS within a designated boundary, most of which has been previously developed for sediment placement. The use of native vegetation qualified for many points in this section.

Climate and Risk

The Project earned 51 out of 116 points in the Climate and Risk section. The majority of points were associated with adaptability and preparation for hazards. Many items in this section required specific studies, which have not been conducted for this project.

POSSIBLE PROJECT IMPROVEMENTS FOR SUSTAINABILITY

The Project is in concept phase. Future details, studies, and additions may result in achieving more points. The Project is weak on public use due to its remote location. Additional points could be achieved if by implementing a recreational area if warranted.

OVERALL CRITIQUE OF THE RATING SYSTEM

The rating system seemed too broad and appears to be geared towards large, multi-faceted projects. The rating system would benefit from having rating areas based on project class with rating categories not applicable removed from the overall possible points.

Using this project as an example, there were a number of questions in the rating system that did not apply to the Project as the scope of work does not involve any new installations and has little interaction with transportation or public use, construction is also minimal. The Project has an important positive impact but a limited scope. It would be more equitable to have the ability to omit the required questions, which cannot apply to this type of project.

The rating system has a strong emphasis on "green" practices but does not consider the fiscal impact of implementing such practices. As custodians of public funds and the environment, we look for opportunities to find balance between these conflicting goals. The rating system seems to put too much emphasis on one without consideration of the other.

Points should be earned for avoidance of issues, where existing conditions are already favorable, such as lighting, noise, and traffic. The system seems to provide more points where problems are mitigated, rather than problems avoided.

The rating system does have a key positive effect in that it is introducing sustainable ideas resulting in better opportunities to harmonize "man" and "nature". Subjecting a project to the rating system allows the team to look at areas not previously considered as well as review current methodologies against a sustainable standard. By becoming more discipline specific, detailed sustainable practices may be better shared as the rating system would be more narrow in key area.

This rating system is a good start and we hope to see continued improvements with each iteration.

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Eaton Wash Dam Inlet/Outlet Works Rehabilitation

Core Service Area: Water Resources

Project Title: Eaton Wash Dam Inlet/Outlet Works Rehabilitation Project

Author(s) and Division(s):

Jack Husted (Water Resources Division)

Jalal Vahabnezhad (Construction Division)

Andy Narag (Land Development Division)

Partnering Agencies: (List all agencies participated including funding agencies)

Project Category(s): (mark all that apply)

___	Multi-benefit	___	Water Supply	_X_	Flood Control/ Stormwater Capture	___	Waste Management	___	Road/ Transportation

Project Type(s): (mark all that apply)

__	Capital project	_X_	Repair and Rehabilitation	___	Emergency operation

Project Component(s): (mark all that apply)

___	Drainage deficiency mitigation: regional/local	___	Reservoir and basin sediment clean out and management	___	Aesthetic improvement
___	Urban runoff and stormwater quality	___	Recreational opportunity	___	Open space/habitat enhancement
_X_	Stormwater conservation/recharge	___	Water supply development/enhancement	___	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	___	Groundwater resource management
___	Pavement technology	___	Road construction/maintenance	___	Solid waste
_X_	Seismic Rehabilitation	_X_	Electromechanical Rehabilitation	___	

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	___	Bridges
_X_	Flood control systems (all major and appurtenant facilities)	___	Spreading grounds	___	Seawater barriers
___	Drinking water infrastructure	___	Streets and highways	___	Street lighting
___	Traffic signals	___	Transit	___	Urban runoff /Stormwater quality BMP
___	Others	___		___	

EXECUTIVE SUMMARY

The Eaton Wash Dam Inlet/Outlet Rehabilitation Project will modernize the outlet works, rehabilitate the dam to meet maximum credible earthquake standards, and provide long-term reliability for this critical flood control and water conservation facility. The existing outlet structure was determined to be seismically deficient. Modifications were required in order to continue operating the reservoir for stormwater management and water conservation benefits. The outlet tower will be replaced with a new hydraulic system and the gates rehabilitated. The project also includes a new low-flow valve, which is anticipated to improve water quality and efficiency for downstream groundwater recharge facilities. The project will also improve dam safety with erosion and slope protection measures at the downstream toe of the dam. This project is under contract for construction in Summer 2012.

The project was rated in the Envision rating system with the following results.

Section	Points Earned	Maximum Possible Score
Quality of Life	50	130
Leadership	60	121
Resource Allocation	57	162
Natural World	79	162
Climate and Risk	51	116
Total	297	691

Many points were earned in the Natural World section for the water conservation and flood management improvements. There was limited opportunity for points in the Quality of Life section because the project will not interact closely with the public. By extending the useful life of existing equipment and facilities, this project earned some points in the Resource Allocation section. The aspects of hazard preparation and adaptability scored some points in the Climate and Risk section.

BACKGROUND

Eaton Wash Dam was built in 1937 for flood control and water conservation purposes. The dam is located in northeastern Pasadena, CA. It is owned and operated by the LACFCD. The dam is 62 feet tall with a reservoir capacity of 952 acre-feet. The reservoir is generally held low, allowing capacity to detain storm flows and release water at a controlled rate for groundwater recharge.

The dam has been analyzed for seismic stability and determined to meet maximum credible earthquake standards. However, the outlet tower, which includes debris rack and actuators for five large slide gates, was determined to be deficient. Without modification, the dam would be restricted as a free draining facility, which would compromise stormwater management and water conservation benefits.

PROJECT DESCRIPTION

This project will replace the deficient outlet tower with a new hydraulic power system. The gates will be rehabilitated for reduced leakage and improved reliability. A new low-flow valve will provide precise control and improved water quality for ground water recharge. All existing lead-based paint and hazardous materials will be abated, and surfaces will be coated with new protective coatings, NSF certified for use with potable water. The project will also improve dam safety with erosion and slope protection measures at the downstream toe of the dam. New gates and signage will improve public safety and aesthetics of the facility. The project promotes sustainability with respect to water conservation and water quality benefits, extending the useful life of existing equipment and facilities, and reducing resources for future maintenance. The total project cost is approximately $3.5 Million.

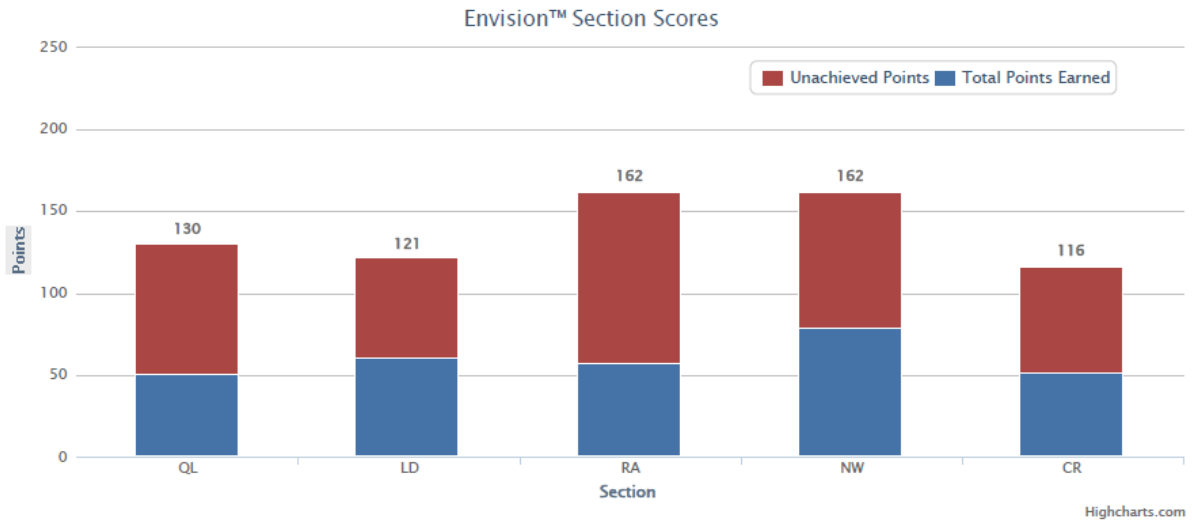
ANALYSIS OF RATING RESULTS

1. EnvISIon summary report
   Content: attach the summary table and bar graphs from EnvISIon.

"Eaton Wash Dam Inlet/Outlet Works Rehab Project"

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	130	50	0	50
LD	121	60	0	60
RA	162	57	0	57
NW	162	79	0	79
CR	116	51	0	51
Total Project Points	**691**	**297**	**0**	297



Quality of Life
The project earned 50 out of 130 points in the Quality of Life section. There was limited opportunity for this project to score points in this section because the project has little interaction with the public, and many items did not seem to apply. Enhancing public health and safety was a key aspect of the project. Aspects of flood control and water conservation could be extrapolated to benefit Quality of Life, but these items are better covered in other sections, so the reviewers chose to focus on items directly effecting the specific questions.

Leadership
The project earned 60 out of 121 points for the Leadership section. Sustainability is a core value of the Department. Stakeholder involvement included environmental and dam safety regulatory agencies.

Resource Allocation
The project earned 57 out of 162 points in the Resource Allocation section, which was the lowest section as a percentage of possible points. In some cases, this is because specific studies were not performed. This project earned some points by extending the useful life of existing equipment and facilities, but not to the extent expected.

Natural World
The project scored best in the Natural World section with 79 out of 162 points. Many points were earned for the water conservation and flood management improvements. Additionally, the project is located near critical habitat, but extensive planning efforts were implemented to avoid impacts to these areas.

Climate and Risk
The project earned 51 out of 116 points in the Climate and Risk section. The majority of points were associated with adaptability and preparation for hazards. Many items in this section require specific studies, which were not conducted for this project.

POSSIBLE PROJECT IMPROVEMENTS FOR SUSTAINABILITY

Design phase is complete and the project is beginning construction, so very few assumptions were needed to complete the rating. There were a number of opportunities where more points may have been earned had the Envision system been applied during the planning and design phase, when additional studies and considerations could be included. The project also could have scored more points by adding elements of public use.

OVERALL CRITIQUE OF THE RATING SYSTEM

There were a number of questions in the rating system that did not apply to the project, as the scope of work was confined to the dam, and did not directly interact with transportation or recreational facilities. It would be beneficial to omit many of these required questions.

One major benefit of this project is long term reliability, extended useful life, and reduced maintenance. These benefits contribute considerable sustainability, but earn very few points in the system.

Points should be earned for avoidance of issues, where existing conditions are already favorable, such as lighting, noise, and traffic. The system seems to provide more points where problems are mitigated, rather than problems avoided.

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The Old Road over Santa Clara River and Southern Pacific Transportation Company

Core Service Area: Transportation

Project Title: The Old Road over Santa Clara River and SPTCO

Author(s) and Division(s): David Chan – DES, Hector Bordas – FMD and, Daniel Quintana - TNL

Partnering Agencies: Caltrans, MTA, City of Santa Clarita

Project Category(s): (mark all that apply)

___	Multi-benefit	___	Water Supply	___	Flood Control/ Stormwater Capture	___	Waste Management	_X_	Road/ Transportation

Project Type(s): (mark all that apply)

___	Capital project	_X_	Repair and Rehabilitation	___	Emergency operation

Project Component(s): (mark all that apply)

___	Drainage deficiency mitigation: regional/local	___	Reservoir and basin sediment clean out and management	___	Aesthetic improvement
___	Urban runoff and stormwater quality	_X_	Recreational opportunity	___	Open space/habitat enhancement
___	Stormwater conservation/recharge	___	Water supply development/enhancement	___	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	___	Groundwater resource management
___	Pavement technology	_X_	Road construction / maintenance	___	Solid waste
_X_	Others: Bridge Replacement	___		___	

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	_X_	Bridges
_X_	Flood control systems (all major and appurtenant facilities)	___	Spreading grounds	___	Seawater barriers
___	Drinking water infrastructure	_X_	Streets and highways	_X_	Street lighting
_X_	Traffic signals	___	Transit	___	Urban runoff /Stormwater quality BMP
___	Others	___		___	

EXECUTIVE SUMMARY

The Santa Clarita Valley is experiencing significant growth in terms of population. The physical location of the Santa Clarita Valley subjects its intersection and roadway system to a substantial amount of regional cross traffic. Capacity enhancements on The Old Road are needed to accommodate the forecasted growth and associated traffic.

This project consists of widening The Old Road from four to six lanes and replacing two bridges between Magic Mountain Parkway and Turnberry Lane. One bridge crosses over the Santa Clara River and the other bridge spans over an abandoned/removed railroad line. A multi-purpose trail will also be constructed to connect The Old Road to an existing City of Santa Clarita trail. Widening of Rye Canyon Road and re-alignment of the Henry Mayo Intersection is also included.

The project was rated using the Envision sustainability rating system and scored 164 out of a possible 752 points. A breakdown of the score, by category, is shown below.

Category	Points Scored	Maximum Possible Score
Quality of Life	60	181
Leadership	34	121
Resource Allocation	20	151
Natural World	34	177
Climate and Risk	16	122
Total	164	752

The project scored the highest in the Quality of Life category because the additional traffic lanes reduces congestion and the new bike lanes and multi-use trail encourage alternative modes of transportation. The project scored the lowest in the Climate and Risk category because certain studies such as carbon life cycle analysis and climate impact assessments are not typically conducted as part of a standard road widening or bridge replacement project.

Improvements that could be made to increase the sustainability of the project include the use of recycled materials, pervious concrete and pavement, requiring the contractor to hire or obtain materials locally, or designing the Santa Clara River bridge as a single span 500 foot long bridge to avoid impacting the river.

The Envision sustainability rating system may not accurately assess the sustainability of the majority of projects here at DPW. The system appears to favor larger and/or more comprehensive multi-benefit infrastructure projects and not a standard road widening or bridge replacement project, such as this one. Because of the added benefits of the road widening and multi-use trail, it is unlikely that a standard road rehabilitation or bridge project will score significantly higher than this project.

BACKGROUND

The Old Road is a four lane roadway (two northbound and two southbound) running parallel to Interstate 5, through the Santa Clarita Valley.

The Santa Clarita Valley is experiencing significant growth in terms of population. The physical location of the Santa Clarita Valley subjects its intersection and roadway system to a substantial amount of regional cross traffic. The region's largest employment centers are located in the west and north of the region adjacent to Interstate 5 and State Route 126. The Old Road is a significant link in the chain of transportation connectivity. Various existing land uses, major activity locations, trip generators, and industrial goods movement within and through the area create high volumes of traffic on The Old Road and the regional roadway network. Additionally, The Old Road offers the only alternate route in the event of an emergency on Interstate 5. The Old Road also plays an important role for daily commuter traffic and commerce.

Existing developments adjacent to and west of The Old Road include Six Flags Magic Mountain Theme Park, Los Angeles County Sanitation District's Valencia Water Reclamation Plant, and agricultural fields. Existing developments adjacent to and east of The Old Road include a Hilton hotel, a shopping center, restaurants, a car wash, gas stations, California Highway Patrol station, and a Caltrans maintenance facility.

The existing Average Daily Traffic on The Old Road between Magic Mountain Parkway and Turnberry Lane is 33,000 and is forecasted to increase to 54,000 by the year 2030. This represents an increase of 61 percent over the next 18 years. If not improved, The Old Road will deteriorate to a Level of Service (LOS) F. Capacity enhancements on the Old Road are needed to accommodate the forecasted growth in corridor traffic and alleviate congestion on the Interstate 5 mainline.

PROJECT DESCRIPTION

The Old Road is designated in the Los Angeles County Preliminary Draft Santa Clarita Valley Area Plan as a 6-lane major highway. However, the section in question is only improved to 4-lanes. The Old Road is fully improved to 6-lanes from Stevenson Ranch Parkway, approximately 2 miles south of the project, to the southern terminus of the project. The proposed project would add 2 more miles of widening and improvements along The Old Road and would complete the most heavily travelled remaining section of The Old Road.

The proposed project is located on The Old Road from approximately 700 feet north of Magic Mountain Parkway to Turnberry Lane, Henry Mayo Drive from The Old Road to the State Route 126 hook ramps, and Rye Canyon Road between The Old Road and Avenue Stanford, near the unincorporated Castaic Junction area of the County of Los Angeles, west of the City of Santa Clarita.

The purpose of the proposed project includes the following:

- To increase regional roadway capacity and enhance safety.
- To alleviate congestion on roadways in the study area, including the above referenced employment centers, and peak-hour congestion on I-5.
- To reduce forecasted traffic congestion on adjacent streets and accommodate projected traffic growth in the surrounding area.
- To be consistent with the Los Angeles County Circulation Element.
- Increase design speed from less than 40 miles per hour to a minimum of 60 miles per hour with a maximum design speed of 65 miles per hour where possible.
- Improve level of service (LOS) at the intersection of Rye Canyon Road and The Old Road.

The need of the project includes the following:

- To alleviate congestion on roadways in the surrounding area and congestion on I-5 at peak hours, in the event of an accident and during major holidays.
- The Old Road over Santa Clara River Bridge currently does not meet Los Angeles County DPW highway design speed safety standards.
- The Old Road over Santa Clara River bridge is not high enough to allow the volume of water of a DPW Capital Flood event (50-year storm) to pass under it.
- The Old Road over Santa Clara River bridge does not meet Caltrans bridge seismic criteria.
- The existing bridges have sustained seismic damage caused by the 1994 Northridge earthquake.

The proposed project consists of the following elements:

- The reconstruction and widening of The Old Road to 6 lanes from approximately 700 feet north of Magic Mountain Parkway to approximately 1,150 feet north of State Route 126 at the Turnberry Lane intersection.
- Intersection enhancements at The Old Road and Skyview Way

- The demolition, replacement, and widening of The Old Road bridge over the Santa Clara River.
- Installation of associated bank protection for the bridge.
- Removal of Armor-Flex blanket in the river.
- The demolition, replacement, and widening of a smaller bridge over the proposed County of Los Angeles Multi-Purpose Regional River Trail (formerly the Pacific Rail Bridge).
- Intersection enhancements at the intersection of The Old Road and Rye Canyon Road.
- Intersection enhancements at The Old Road/Interstate 5 hook ramps.
- Installation of bank protection in the Santa Clara River to protect The Old Road north of the water reclamation plant.
- Extension of an existing drainage culvert.
- Re-alignment of the intersection of The Old Road and Henry Mayo Drive.
- The addition of bike lanes, sidewalks, widened shoulders, and raised medians along segments of the project.
- Installation of a segment of the County of Los Angeles Multi-purpose Regional River Trail.

The proposed improvements would significantly increase regional capacity on this direct north-south commuter route. The project would also reduce forecasted congestion on Interstate 5 and accommodate projected traffic growth in the area. Development plans for this area indicate that traffic growth will continue into the foreseeable future, resulting in an overall increase in intra-regional, inter-regional, and commuter traffic. Current traffic demand in the project area meets or exceeds roadway capacity for many of the arterial roadways, with significant increases in traffic demand anticipated over the next few years based on projected area growth. As such, the widening of The Old Road to six lanes is critical to passage of traffic and emergency vehicles in the area.

The project is funded through a combination of Federal Highway Administration (FHWA) Highway Bridge Program funds, a grant from the Los Angeles County Metropolitan Transportation Authority (MTA), and County funds.

ANALYSIS OF RATING RESULTS

Overall, the project scored 164 out of a possible 752 points. Below is a chart and graph of the rating results from the Envision rating system. A discussion of each of the rating category follows thereafter.

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	181	60	0	60
LD	121	34	0	34
RA	151	20	0	20
NW	177	34	0	34
CR	122	16	0	16
Total Project Points	**752**	**164**	**0**	164

Quality of Life

The proposed project scored the most points (60 out of a possible 181) in the Quality of Life category. The widening of the road from 4 lanes to 6 lanes greatly increases vehicular mobility in the area and decreases traffic congestion. The proposed bicycle lanes on both the northbound and southbound sides of The Old Road also encourage alternative modes of transportation and eases traffic congestion. The installation of a multi-purpose trail to connect The Old Road to the existing City of Santa Clarita trail (that currently ends below the Interstate 5 freeway) also contributes to an improved quality of life. Additionally, key stakeholders, affected agencies, and the community have either been or will be engaged to solicit input on the project design.

Leadership

The project scored 34 out of a possible 121 points in the Leadership category. At an organizational level, sustainability is one of the Values in the Department's strategic plan. At a project team level, the team is committed to evaluating sustainability through the Envision rating system; however there is no clear direction or indication yet on whether funding managers are willing to fund project enhancements to achieve increased sustainability. There is also plenty of opportunity for stakeholder feedback and involvement. Coordination meetings with affected private and public agencies, such as the City of Santa Clarita, Caltrans, the County Sanitation District, and Newhall Land, are taking place. Additionally an environmental document will be prepared for public review and community meetings will be held.

Resource Allocation

The project scored 20 out of a possible 151 points in the Resource Allocation category. A life cycle energy assessment will not be conducted as part of the project design, so we were unable to obtain points associated with reducing the net embodied energy of the project. Also, our project specifications typically do not include a requirement for obtaining materials and equipment from suppliers who implement sustainable practices. The use of recycled or regional materials to minimize transportation costs and impacts will also not be strict requirement in the project specifications. Also, we were unable to obtain points for commissioning an energy system because there is no energy systems associated with the project. We were able to obtain points for protecting fresh water availability because the project requires minimal usage of freshwater and bio-swales will be constructed where appropriate to capture runoff and recharge the local groundwater.

Natural World

The project scored 34 out of a possible 177 points in the Natural World category. Three items were excluded in our rating because they did not apply to the project. These were the items associated with farmland, adverse geology, and development on steep slopes. Because the project involves the demolition and construction of new bridge piers in the Santa Clara River the project does not qualify for any points associated with protecting prime habitat or protecting wetlands. Additionally, a portion of the road widening is located within a designated floodplain and will reduce infiltration. The project did score some points associated with preserving greenfields because 75 percent of the project is located within the road right-of-way, which is designated for roadway purposes.

Climate and Risk

The project scored the least points (16 out of a possible 122) in the Climate and Risk category. This is mainly due to the fact that the rating system requires certain studies to qualify for the points. These studies include a carbon life cycle analysis to estimate greenhouse gas emissions and a climate impact assessment to assess climate threat. These studies are typically not conducted for a road widening or bridge replacement project such as this one. Climate change, such as a change in intensity of a 50-year storm, was also not considered in our design, so the

project did not receive points associated with preparing for long term adaptability. Additionally, the widening of The Old Road also increases the area of pavement and the associated heat island effect.

Possible Project Improvements to Increase Sustainability

Some possible improvements or changes to the project that could be made to make the project a more sustainable infrastructure project include the following:

- Studies could be conducted to determine if more recycled or re-used materials could be utilized in construction of the project. Concrete debris from demolition of the two bridges could potentially be used as base material for new roadway.

- The project bid package could be modified to include an incentive or requirement to hire locally.

- Pervious concrete or pavement could be utilized to decrease storm water run-off and increase groundwater infiltration.

- Bio-swales are included as part of the project. Those areas could potentially be enlarged to create small pocket parks or mini recreational facilities.

- Carbon lifecycle analysis and climate studies could be conducted to determine measures to reduce greenhouse gas emissions and assess climate threat.

- Impacts to Santa Clara River can be reduced by constructing a single span 500 foot long bridge instead of a multi-span bridge that requires construction equipment and activities in the riverbed. However, this will significantly increase costs.

Overall critique of the Envision Rating System

The one size fits all philosophy of the Envision sustainability rating system may not accurately assess the sustainability of the majority of projects here at DPW. The system appears to favor larger and/or more comprehensive multi-benefit infrastructure projects and not a standard road widening or bridge replacement project, such as this one.

There are several items or credits that we feel are not applicable to the typical road or bridge project being administered by DPW. These items are as follows:

QL1.3 Develop local skills and capabilities
QL2.3 Minimize light pollution
QL3.3 Enhance public space
LD2.1 Pursue by-product synergy opportunities
LD3.2 Address conflicting regulations and policies

RA1.1 Reduce net embodied energy
RA2.1 Reduce energy consumption
RA2.2 Use renewable energy
RA2.3 Commission and monitor energy systems
RA3.2 Reduce potable water consumption
RA3.3 Monitor water systems
CR1.1 Reduce greenhouse gas emissions
CR2.1 Assess climate threat
CR2.2 Avoid traps and vulnerabilities

Additionally, bridge projects frequently cross a river or stream. By definition, the bridge cannot be placed anywhere else, so unless the bridge is a single span, there is no way to avoid impacting the habitat below the bridge. The affects can be mitigated, but not avoided.

A rating of the project was conducted with the items noted above excluded. Using this revised methodology, the project scored 29 percent (159 out of a possible 551 points). By comparison, the original score was 22 percent (164 out of 752 points).

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Hasley Canyon Road Roundabout

Core Service Area: Transportation

Project Title: Hasley Canyon Road Roundabout

Author(s) and Division(s): Daniel Quintana – TNL. Clarence Su – GMED, and Roy Cruz - DES

Partnering Agencies: Caltrans, MTA, City of Santa Clarita, and Newhall Land

Project Category(s): (mark all that apply)

___	Multi-benefit	___	Water Supply	___	Flood Control/ Stormwater Capture	___	Waste Management	_X_	Road/ Transportation

Project Type(s): (mark all that apply)

_X_	Capital project	_X_	Repair and Rehabilitation	___	Emergency operation

Project Component(s): (mark all that apply)

___	Drainage deficiency mitigation: regional/local	___	Reservoir and basin sediment clean out and management	_X_	Aesthetic improvement
___	Urban runoff and stormwater quality	___	Recreational opportunity	___	Open space/habitat enhancement
_X_	Stormwater conservation/recharge	___	Water supply development/enhancement	___	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	___	Groundwater resource management
___	Pavement technology	_X_	Road construction/maintenance	___	Solid waste
___	others	___		___	

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	_X_	Bridges
___	Flood control systems (all major and appurtenant facilities)	___	Spreading grounds	___	Seawater barriers
___	Drinking water infrastructure	_X_	Streets and highways	_X_	Street lighting
___	Traffic signals	___	Transit	___	Urban runoff /Stormwater quality BMP
___	Others	___		___	

EXECUTIVE SUMMARY

The Castaic area has been experiencing high growth through the rapid addition of residential, commercial, and industrial developments. This has caused a significant increase in the amount of traffic with an even greater increase expected in the future. Over 25,000 vehicles per day now pass through the intersection of The Old Road and Hasley Canyon Road. The condition of the Interstate 5 (I-5)/Hasley Canyon Road Interchange, prior to the project, produced an operational deficiency, constraints on capacity of the interchange and signalized intersection at The Old Road and Hasley Canyon Road, and higher accident rates. Congested conditions were expected in the build-out or horizon year 2030. County of Los Angeles along with Caltrans and Newhall Land, a major landowner in the area, recognized the need to provide for the future development and projected increases in traffic, to accommodate increased inter-regional growth and traffic, to improve circulation in the area, and to enhance safety at this interchange.

The Hasley Canyon Road Roundabout Project involved widening the Hasley Canyon Road overcrossing, modifying existing freeway ramps, constructing new freeway ramps, and providing two modern roundabouts - one at the intersection of Hasley Canyon Road and northbound I-5 on/off-ramp, and the other at the intersection of Hasley Canyon Road and The Old Road. This project also included widening & seismically retrofitting the I-5 bridge over Castaic Creek. The project was implemented to increase the capacity of the interchange and local roadways, to improve mobility, enhance safety, alleviate congestion and delay, and accommodate planned growth while minimizing impacts on surrounding properties.

The project was rated using the EnvISIon sustainability rating system and scored 244 out of a possible 768 points. A breakdown of the score, by category, is shown below.

Category	Points Scored	Maximum Points Possible
Quality of Life	53	166
Leadership	37	121
Resource Allocation	20	162
Natural World	91	203
Climate and Risk	43	116
Total	244	768

This project scored the highest in the Natural World category because it managed to avoid the use of land that is prime habitat, prime farmland or unsuitable for development such as steep slopes. It also did not use any Greenfield site and did not have any adverse geological conditions. This was mostly accomplished by the project utilizing the footprint of existing improvements on land zoned as public service facilities. The project also managed stormwater by absorbing and infiltrating almost all stormwater runoff from the site. The lowest score was in the Resource Allocation category. This was because no analysis was conducted for things like net embodied energy of project materials, sustainable practices of suppliers, or use of fresh

water. Contract documents did not specify the use of local materials or require the reduction of materials taken off site.

BACKGROUND

The location of the project is in the northwest area of the City of Santa Clarita (Castaic area), which has historically been rural in nature with traffic at many of the existing interchanges devoted to freeway-oriented businesses. The current land use west of I-5 reflects a mixture of open space, urban, and rural. The immediate project area now has residential developments, commercial and industrial properties, agricultural uses and vacant land consisting of undeveloped commercial/industrial areas, hills or floodplains. The surrounding urbanized development supports a variety of commercial and industrial businesses within the Valencia Commerce Center, located north of the SR 126/Commerce Center Drive Intersection. The Valencia Commerce Center is an ongoing, major expansion of the Valencia Industrial Center on approximately 1,436 acres. It includes 702 acres of industrial park, with approximately 252 acres of industrial space, 30 acres of general commercial area and 91 acres of office park. The area also has plans for additional residential developments and an 11-acre recreational area with jogging trails and an equestrian trail. This has significantly increased the volume of traffic passing through this interchange with more traffic expected in the future. The condition of the interchange, prior to the project, produced an operational deficiency, constraints on capacity of the interchange and signalized intersection, and higher accident rates. Traffic volumes on the freeway ramps and the signalized intersection were expected to reach or exceed capacity by 2009. Congested conditions were expected in the build-out or horizon year 2030.

County of Los Angeles along with the State of California Department of Transportation (Caltrans) and Newhall Land, a major landowner in the area, recognized the need to provide for the future development and projected increases in traffic, to accommodate increased inter-regional growth and traffic, to improve circulation in the area, and to enhance safety at this interchange. The County of Los Angeles additionally partnered with the Los Angeles County Metropolitan Transportation Authority, Federal Highway Administration, and the City of Santa Clarita to implement this project.

PROJECT DESCRIPTION

The project reconstructed and reconfigured the existing interchange at the intersection of I-5 and Hasley Canyon Road located in the northwest of the City of Santa Clarita in Los Angeles County.

As a result of planned commercial/industrial developments and transportation improvement projects, the existing I-5/Hasley canyon Road intersection was expected to experience significant increases in traffic. Newhall Land and Farming Company (a major land owner and developer within the project area), the County of Los Angeles, and Caltrans recognized the need

to provide for future development and projected increases in traffic, to improve circulation in the area, and to enhance safety at this intersection. To accomplish these objectives, the project partners proposed to reconfigure the interchange by replacing the Hasley Canyon Road overcrossing, modifying the existing ramp and improving The Old Road and Hasley Canyon Road intersection which was proximate enough to the interchange on the west side to be considered part of the interchange.

The purpose of the proposed project included the following:

- Increase capacity and improve local access.
- Improve the operation of the interchange.
- Incorporate planned infrastructure improvements.
- Enhance safety.
- Accommodate planned growth within the study area.

The need of the project included the following:

- Proposed developments along Commerce center Drive and Hasley Canyon Road will generate additional traffic on I-5, which would warrant improvements to the interchange and to reduce delay and improve safety and traffic circulation.
- There was projected to be an average four-fold increase in traffic within the interchange over the next 20 years, and the existing ramp intersection would not have been able to provide sufficient capacity for the traffic volumes.
- Some movements through the interchange experienced collision rates that exceeded the state wide average. With a projected increase in traffic volumes, collision rates were also expected to rise. The proposed project would reduce collision rates and greatly reduce the severity of collisions through the use of roundabouts.

The project consisted of the following elements:

- Construction of a modern roundabout at The interaction of The Old Road, Hasley Canyon Road, and I-5 southbound on-ramp.
- Construction of a second east roundabout at the intersection of Hasley Canyon Road and I-5 northbound on/off-ramps.

- Widening of the Hasley Canyon Road freeway overcrossing to provide two westbound lanes and one eastbound lane.
- Provide an additional I-5 southbound on ramp from the intersection of The Old Road and Sedona Way.
- Modify the existing ramps.
- Seismically retrofit the I-5 bridge over Castaic Creek.
- Landscaping on the roundabout center islands, approach medians and parkways.

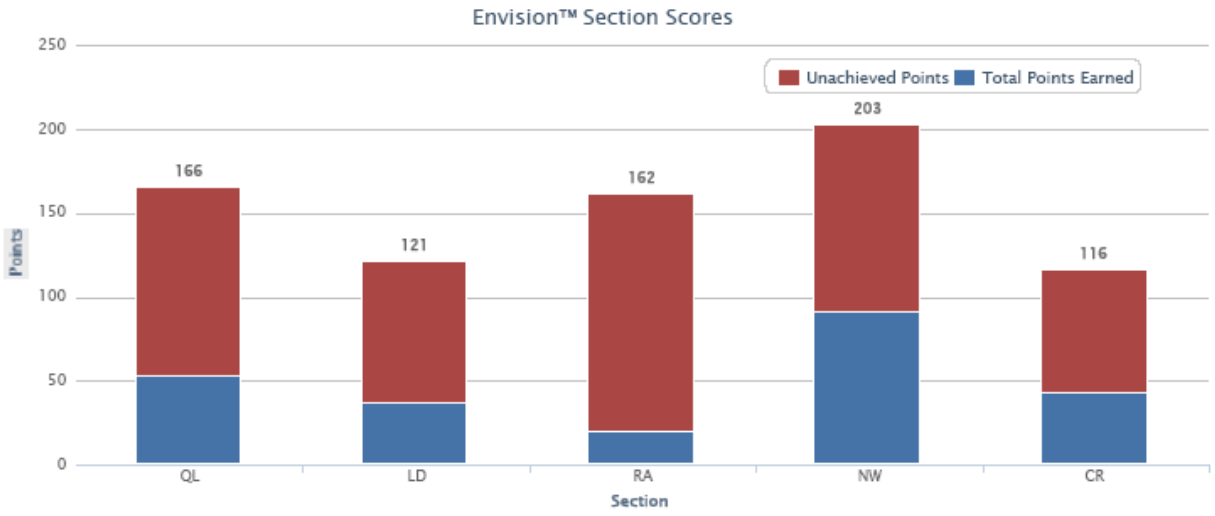
The project was funded through a combination of public and private developer funds.

ANALYSIS OF RATING RESULTS

Overall, the project scored 244 out of a possible 768 points. Below is a chart and graph of the rating results from the EnvISIon rating system. A discussion of each of the rating category follows after.

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	166	48	5	53
LD	121	33	4	37
RA	162	16	4	20
NW	203	91	0	91
CR	116	38	5	43
Total Project Points	**768**	**226**	**18**	244



This project scored the highest in the Natural World category because it managed to avoid the use of land that is prime habitat, prime farmland or unsuitable for development such as steep slopes. It also did not use any Greenfield site and did not have any adverse geological conditions. This was mostly accomplished by the project utilizing the footprint of existing improvements on land zoned as public service facilities. The project also managed stormwater by absorbing and infiltrating almost all storm water runoff from the site. The lowest score was in the Resource Allocation category. This was because no analysis was conducted for things like net embodied energy of project materials, sustainable practices of suppliers, or use of fresh water. Contract documents did not specify the use of local materials or require the reduction of materials taken off site.

Quality of Life

The project scored 53 out of a possible 166 points in this category. This project widened the I-5 overpass, added freeway ramps and modern roundabouts to increase the capacity and to improve the operation and efficiency of this interchange. This was done to accommodate future growth in the area while minimizing impacts on surrounding properties. By replacing the traffic signal at Hasley Canyon Road and The Old Road with a modern roundabout, delays to motorists were minimized and severity of collisions reduced. The project also incorporated landscaping providing aesthetic and environmental improvements to the interchange. This contributes greatly to the quality of life of current and future users.

Leadership

The project scored 37 out of a possible 121 points in the Leadership category. While there was no organization level commitment for sustainability at the time of project inception, several elements were incorporated that promote sustainability. The use of modern roundabouts over traditional traffic signals reduces energy consumption by vehicles and eliminates need for electrical energy used by traffic signals, resulting in a more sustainable interchange. A retention basin was also constructed to capture and percolate stormwater run-off originating from the project site. Other leadership elements incorporated into this project include engaging the community and stakeholders to provide input and buy off on the scope. Infrastructure integration was accomplished by a design that took into account future growth and the project team also developed a working plan for long term maintenance. A lack of organizational level commitment to sustainability during project development did not provide an opportunity for the establishment of project management systems that could seek to improve sustainable performance by pursuing things such as by-product synergy opportunities or even addressing conflicting regulations and policies that create barriers to implementing sustainable infrastructure.

Resource Allocation

The project scored 20 out of a possible 162 points in the Resource Allocation category. This was the poorest performing category of all the categories. The primary reason for the low score was because no analyses were performed to determine things like embodied energy, sustainable practices of suppliers, amount of excavated materials taken off-site, or the use of fresh water. A secondary reason was the lack of project management systems that could identify opportunities to use regional materials to reduce transportation costs, and specifying the use greywater, recycled water or stormwater to reduce the consumption of fresh and potable water. Some points were obtained from use of 5-20 percent of recycled materials and diversion of waste from landfills by re-using approximately 25 percent of waste materials at other job sites. Credit was also claimed for the reduction in energy consumption provided by the use of modern roundabouts as an alternative to traffic signals.

Natural World

The project scored the highest in this category collecting 91 out of a possible 203 points. The primary reason for this is that the improvements were constructed on the existing interchange footprint with little additional impact to previously unimproved land. Because the land the existing interchange utilized was zoned as public service facilities and floodway/flood plain, points were received for the preservation of prime farmland. The project also scored strongly in its management of stormwater by incorporating a retention basin that collects most of the run-off from the sites and infiltrates it into the ground recharging the groundwater. Filters and other measures were also used to protect the surface water in Castaic Creek.

Climate and Risk

The project scored 43 out of a possible 116 points in this category. Reduction of air pollutant emission was a strong performing element of this category. This is because the improvements greatly improve the flow of traffic through this interchange reducing vehicle emissions and improving air quality to a level higher than the pre-project condition. Maximum points were also awarded to preparedness for short term hazards through the restoration of wetland improvements part of the project. No life-cycle carbon assessment was performed to provide the opportunity to claim credit for the reduction of green house gases. There was also no climate impact assessment performed to claim any credit for assessing climate threat. As a result of incorporating modern roundabouts into the design, the project could claim points for innovation, as modern roundabouts are considered innovative treatments that have yet to acquire mainstream acceptance. Roundabouts benefit the environment by reducing vehicle emissions and using less energy.

Possible Project Improvements to Increase Sustainability

Possible improvements or changes that could have made the project more sustainable include the following:

- Commitment to sustainability by the participating agencies at the time of project development to assure that sustainability was considered throughout project development and implementation.
- Project management systems that would manage the scope, scale, and complexity of this project while seeking to improve sustainable performance.
- Since the project lies in a rapidly developing area with ongoing construction, it could have pursued by-product synergy by identifying and obtaining unwanted by-products or discarded materials and resources from nearby construction activities or industrial operations.
- Development of contract documents to support sustainable procurement practices by providing incentives to utilize local suppliers.
- Evaluation of potential sources of water during project development to require the contractor to utilize more greywater, recycled water, and stormwater to preserve fresh water and potable water.
- As part of project development, a life-cycle carbon assessment could have been conducted to determine and reduce net greenhouse gas emissions over the cycle of the project.

Overall critique of the rating system

The EnvISIon rating system utilizes some metrics that are not typically part of projects such as road projects. Some of these metrics would be useful if considered during the project development stage. Commitment from all project partners and stakeholders that these metrics would add value to the project and not cause unnecessary delays and increase project costs is also necessary. The questions do not apply to all projects and with unequal weighting, some projects appear more favored to receive higher scorings. Nonetheless, the EnvIsIon rating system begins an important process of making sustainability part of all the projects within DPW.

Slauson Avenue Streetscape Improvement

Core Service Area: Transportation

Project Title: Slauson Avenue Streetscape Improvement Project

Author(s) and Division(s): Shailesh Patel – RMD, Daniel Quintana – TNL and, Lee Miller - PDD

Partnering Agencies: City of Los Angeles

Project Category(s): (mark all that apply)

___	Multi-benefit	___	Water Supply	___	Flood Control/ Stormwater Capture	___	Waste Management	_X_	Road/ Transportation

Project Type(s): (mark all that apply)

___	Capital project	_X_	Repair and Rehabilitation	___	Emergency operation

Project Component(s): (mark all that apply)

___	Drainage deficiency mitigation: regional/local	___	Reservoir and basin sediment clean out and management	_X_	Aesthetic improvement
___	Urban runoff and stormwater quality	__	Recreational opportunity	___	Open space/habitat enhancement
___	Stormwater conservation/recharge	___	Water supply development/enhancement	___	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	___	Groundwater resource management
___	Pavement technology	_X_	Road construction / maintenance	___	Solid waste
__	Others: Bridge Replacement	___		___	

Infrastructure type(s): (mark all that apply)

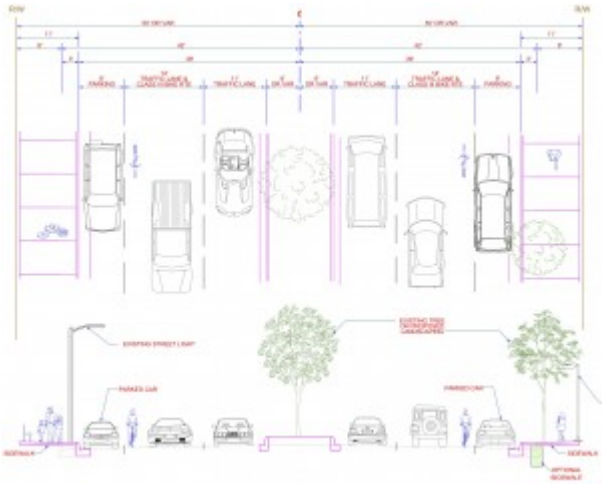
____	Public buildings	____	Airport	_X_	Bridges
___	Flood control systems (all major and appurtenant facilities)	____	Spreading grounds	____	Seawater barriers
____	Drinking water infrastructure	_X_	Streets and highways		Street lighting
___	Traffic signals	____	Transit	____	Urban runoff /Stormwater quality BMP
____	Others	____		_X_	Streetscape, Landscape and Aesthetic

EXECUTIVE SUMMARY

On November 28th, 2011, representatives of the View Park, Windsor Hills and Ladera Heights communities joined forces at the Public Improvements Taskforce meeting to discuss strategies to improve the livability, accessibility and walkability of the Slauson Ave corridor. Strategies discussed included widening sidewalks, adding bike lanes, increasing landscaping within the medians and the pedestrian right of way, as well as reducing traffic lanes. The residents reviewed the 6 different options, along with their "pro's" and "con's", and provided their feedback to 2nd District.

Option A

1. Widen sidewalk from 8' to 11'
2. Remove peak period travel lane
3. Add raised landscaped median
4. Parkway pedestrian lighting
5. Add Class III bike route



Removal of one lane of traffic in each direction. Adds a class III bicycle route, parallel parking, landscaping, raised median, and widens sidewalks. Provides an 11-foot sidewalk, 8 foot parallel parking lane, 14-foot outside lane signed for a bicycle route, and an 11-foot inside lane for each direction, and a 12-foot raised median.

PROS:

- Provides for a Class III bicycle route as proposed on the County Bicycle Master Plan
- Improved walkability
- Enhances access to shops and restaurants
- Reduced traffic noise

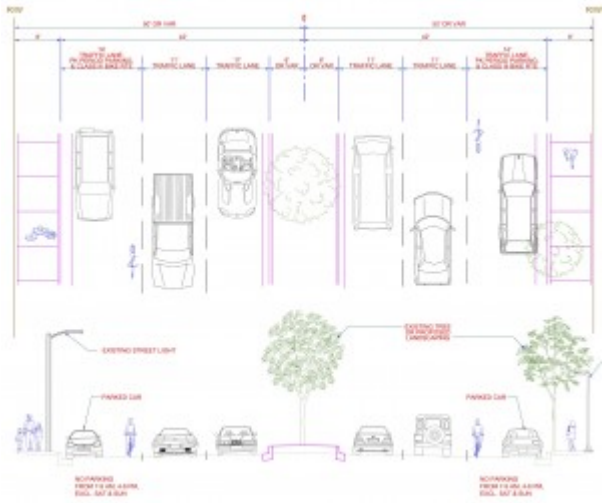
- Significant aesthetic improvement
- Encourages cycling
- Continuous unrestricted parkin

CONS:

- Removal of one traffic lane in each direction will reduce the traffic capacity along Slauson Avenue within the project limits – increased traffic congestion
- Anticipate traffic from Slauson Avenue to divert to nearby roadways, including those under the jurisdiction of the Cities of Inglewood and Los Angeles, to avoid congested intersections
- Elimination of travel lane triggers the need for an Environmental Impact Report(EIR) with no feasible mitigation, construction could start in 30-36 months

Option B

1. Maintain 8’ sidewalk
2. Add raised landscaped median
3. Parkway pedestrian lighting
4. Add Class III bike route



Maintains existing traffic lanes and sidewalks. Adds a Class III bicycle route, landscaping, and raised median. Provides an 8-foot sidewalk, 14-foot outside peak period travel lane signed for a bicycle route, 11-foot middle lane, and an 11-foot inside lane for each direction, and a 12-foot raised median.

PROS:

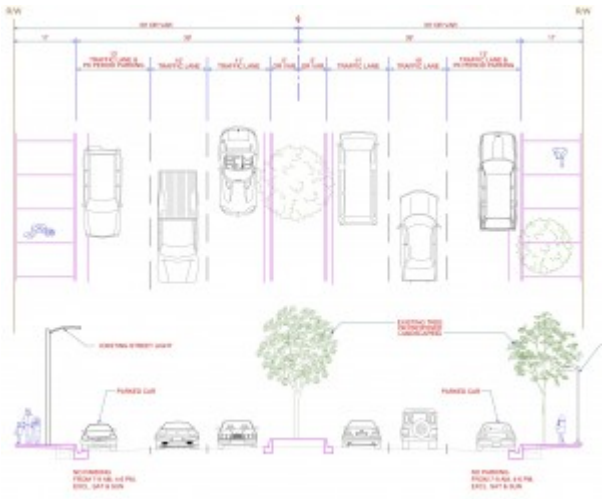
- Provides for a Class III bicycle route as proposed on the County Bicycle Master Plan
- Aesthetic improvement
- Encourages cycling
- Maintains peak period travel lane – no increase in traffic congestion
- No significant environmental impacts, construction could start in 18-24 months

CONS:

- Limited opportunity for walkability improvements

Option C

1. Widen sidewalk from 8’ to 11’
2. Add raised landscaped median
3. Parkway pedestrian lighting



Maintains existing traffic lanes. Adds landscaping, raised median, and widens sidewalks. Provides an 11-foot sidewalk, 13-foot outside peak period travel lane, 10-foot middle lane, and an 11-foot inside lane for each direction, and a 10-foot raised median.

PROS:

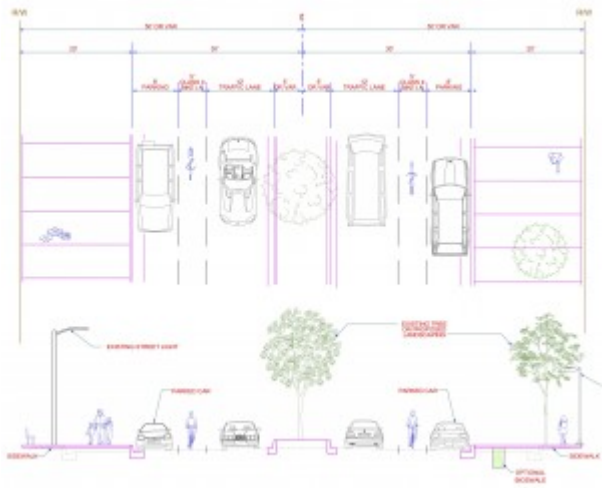
- Improved walkability
- Enhances access to shops and restaurants
- Significant aesthetic improvement
- Maintains peak period travel lane – no significant increase in traffic congestion
- No significant environmental impacts, construction could start in 18-24 months

CONS:

- Narrow width middle travel lane – 10-foot
- No bicycle route

Option D – Alternative 1

1. Widen sidewalk from 8’ to 20’
2. Remove two travel lanes
3. Add raised landscaped median
4. Parkway pedestrian lighting
5. Add Class II bike lane



Removal of two lanes of traffic in each direction. Adds parallel parking, Class II bicycle lanes, raised medians, landscaping, and widens sidewalks. Provides a 20-foot sidewalk, 8-foot parallel parking lane, 5-foot class II bicycle lane, and a 12-foot traffic lane for each direction, and a 10-foot raised median.

PROS:

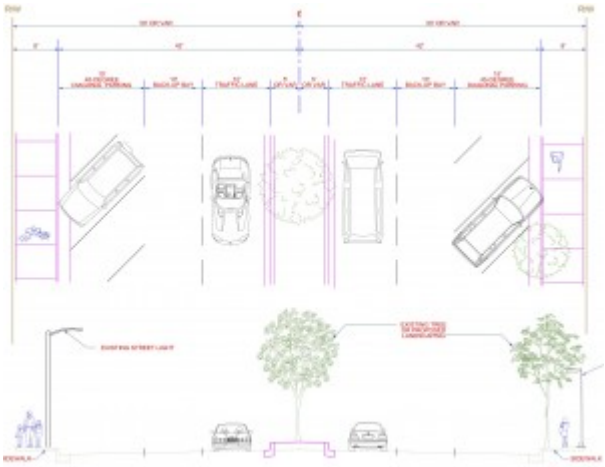
- Provides for a Class II bicycle lane
- Greatly improved walkability
- Enhances access to shops and restaurants
- Reduced traffic noise
- Significant aesthetic improvement
- Encourages cycling
- Continuous unrestricted parking

CONS:

- Removal of two traffic lanes in each direction will significantly reduce the traffic capacity along Slauson Avenue within the project limits – greatly increased traffic congestion
- Anticipate significant increase in traffic from Slauson Avenue to divert to nearby roadways, including those under the jurisdiction of the Cities of Inglewood and Los Angeles, to avoid congested intersections
- Elimination of two travel lanes in each direction triggers the need for an Environmental Impact Report(EIR) with no feasible mitigation, construction could start in 30-36 months

Option D – Alternative 2

1. Maintain 8' sidewalk
2. Remove two travel lanes
3. Add raised landscaped median
4. Parkway pedestrian lighting
5. Add 45-degree diagonal parking and back-up bay



Removes two lanes of traffic. Adds 45-degree diagonal parking, landscaping, and a raised median. Provides an 8-foot sidewalk, 15-foot diagonal parking, 10-foot backup bay, and a 12-foot travel lane for each direction, and a 10-foot raised median.

PROS:

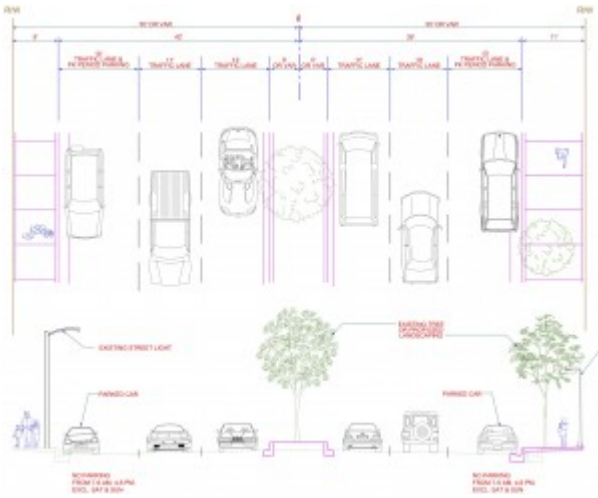
- Reduced traffic noise
- Aesthetic improvement
- Continuous unrestricted parking and increased number of spaces
- Easier parking access

CONS:

- Removal of two traffic lanes in each direction will significantly reduce the traffic capacity along Slauson Avenue within the project limits – greatly increased traffic congestion
- Anticipate significant increase in traffic from Slauson Avenue to divert to nearby roadways, including those under the jurisdiction of the Cities of Inglewood and Los Angeles, to avoid congested intersections
- Elimination of two travel lanes in each direction triggers the need for an Environmental Impact Report(EIR) with no feasible mitigation, construction could start in 30-36 months
- Limited opportunity for walkability improvements
- No bicycle route

Option E

1. Widen sidewalk from 8’ to 11’ on south side only
2. Add raised landscaped median
3. Parkway pedestrian lighting



Maintains existing traffic lanes. Adds landscaping, raised median, and widens sidewalk on south side only. Provides an 8-foot sidewalk, 14-foot outside peak period travel lane, 11-foot middle lane, and an 12-foot inside lane on the north side. Provides a 11-foot sidewalk, 13-foot outside peak period traffic lane, 10-foot middle lane, and an 11-foot inside lane on the south side. Also provides a 10-foot raised median.

PROS:

- Improved walkability
- Enhances access to shops and restaurants
- Significant aesthetic improvement
- Trial approach to determine effectiveness and identify issues
- Maintains peak period travel lane
- No significant environmental impacts, construction could start in 18-24 months

CONS:

- Improves only one-half of the street
- Narrow width middle travel lane – 10-foot
- No bicycle route

Based on the preliminary feedback from the community, we have rated Option A. This project consists of widen sidewalk from 8 feet to 11 feet, remove peak period travel lane, add raised landscaped median, improve parkway pedestrian lighting and add class III bike route.

The project is located in the unincorporated areas of Windsor Hills and View Park and the project limit is from La Brea Ave to Angeles Vista Blvd.

The project was rated using the Envision sustainability rating system and scored 292 out of a possible 773 points. A breakdown of the score, by category, is shown below.

Category	Points Scored	Maximum Possible Score
Quality of Life	100	181
Leadership	45	106
Resource Allocation	58	182
Natural World	41	182
Climate and Risk	48	122
Total	292	773

The project scored the highest in the Quality of Life category because addition of new landscaping, street furniture will improve aesthetic of the area and new pedestrian lights will improve the safety of the community. The project scored the lowest in the Climate and Risk category because certain studies such as carbon life cycle analysis and climate impact assessments are not typically conducted as part of a standard streetscape project.

Improvements that could be made to increase the sustainability of the project include the use of recycled materials, pervious concrete and pavement, requiring the contractor to hire or obtain materials locally.

The Envision sustainability rating system may not accurately assess the sustainability of the majority of projects here at DPW. The system appears to favor larger and/or more comprehensive multi-benefit infrastructure projects and not a standard streetscape project, such as this one.

BACKGROUND

For many years, residents surrounding Slauson Avenue (from La Brea Ave to Angeles Vista Blvd) have passionately argued that Slauson Avenue should be upgraded to reflect the purchasing power and stature of the surrounding communities. Residents from View Park, Ladera Heights, and the Windsor Hills communities joined Supervisor Ridley-Thomas at a community meeting to discuss the steps necessary to work towards real revitalization. The Second District further discussed the steps were feasible and necessary to make the Slauson Corridor into a Town Center.

With the potential to become a new community Town Center, the commercial strip along Slauson Avenue between Angeles Vista Boulevard and La Brea Avenue would be an example of an older commercial growth that could benefit from a revitalization strategy. The Second District proposes to develop a unique Town Center strategy that includes the following:

- Definition of a neighborhood identity and commercial village “name”
- New public buildings
- Sidewalk and streetscape improvements, including lampposts, landscaping, street furniture, signage and crosswalks
- Commercial building redevelopment
- Access pathways to surrounding residential areas
- Commercial business parking
- Expansion of retail and restaurant offerings
- Region-wide “branding” and marketing

These strategies would eliminate or minimize the current disadvantages in the existing corridor.

- Older building stock
- Narrow sidewalks
- Wide streets, and fast automobile traffic
- Two public jurisdictions: City and County

PROJECT DESCRIPTION

This project on Slauson Ave will add new raised landscaped median, add class III bike lane, widen the sidewalk from 8 feet to 11 feet and the aesthetic of the area by installing new furniture and pedestrian lights. The proposed project would reduce the peak hour traffic lane which may result in significant traffic delays.

The proposed project is located on Slauson Avenue from La Brea Ave to Angeles Vista Blvd in the unincorporated areas of Windsor Hills and View Park. The purpose of the proposed project includes the following:

- To improve the livability, accessibility and walkability of the Slauson Ave corridor.
- To improve the aesthetic of the area
- To create more business friendly environment.
- To enhance safety by widening the sidewalk and installing pedestrian lights
- To encourage alternate mode of transportation for local people by adding class III bike routes
- To improve the quality of life of the community by installing raised landscaped medians with green infrastructure features like bio swale.

The proposed project consists of the following elements:

- The addition of bike lanes, sidewalks and raised medians along segments of the project.
- Installation of parkway pedestrian lights
- Installation of curb side containers on the sidewalk
- Installation of environmentally friendly street furniture
- Installation of green infrastructure elements like bio swale

The proposed improvements would be more business and environmentally friendly and significantly improve the aesthetic of the area.

The project will consist of the following elements:

- Construction of a raised medians
- Landscaping on the medians
- Widen the sidewalk
- New class III bike lanes

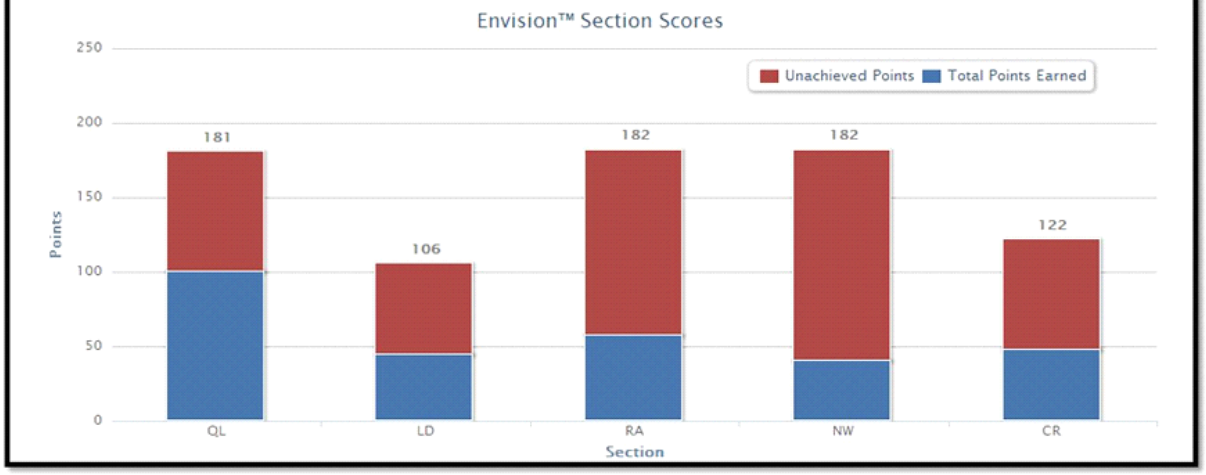
ANALYSIS OF RATING RESULTS

Overall, the project scored 292 out of a possible 773 points. Below is a chart and graph of the rating results from the EnvISIon rating system. A discussion of each of the rating category follows after.

1. Section Totals Summary

Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	181	100	0	100
LD	106	45	0	45
RA	182	58	0	58
NW	182	41	0	41
CR	122	48	0	48
Total Project Points	**773**	**292**	**0**	292



Quality of Life

The proposed project scored the most points (100 out of a possible 181) in the Quality of Life category. The widening of the sidewalk, proposed landscape medians, installation of pedestrian lights and new street furniture will improve the aesthetic of the area and proposed bike lanes will also encourage alternative modes of transportation and impeases local traffic congestion. Additionally, key stakeholders, affected agencies, and the community have either been or will be engaged to solicit input on the project design.

Leadership

The project scored 45 out of a possible 106 points in the Leadership category. At an organizational level, sustainability is one of the Values in the Department's strategic plan. At a project team level, the team is committed to evaluating sustainability through the Envision rating system; however there is no clear direction or indication yet on whether funding managers are willing to fund project enhancements to achieve increased sustainability. There is also plenty of opportunity for stakeholder feedback and involvement. Coordination meetings with local residents and SD2 are taking place. A website is developed per SD2's request for residents to provide their feedback. Additionally, an environmental document will be prepared for public review and community meetings will be held.

Resource Allocation

The project scored 58 out of a possible 182 points in the Resource Allocation category. A life cycle energy assessment will not be conducted as part of the project design, so we were unable to obtain points associated with reducing the net embodied energy of the project. Also, our project specifications typically do not include a requirement for obtaining materials and equipment from suppliers who implement sustainable practices. The use of recycled or regional materials to minimize transportation costs and impacts will also not be strict requirement in the project specifications. Also, we were unable to obtain points for commissioning an energy system because there is no energy systems associated with the project. We were able to obtain points for protecting fresh water availability because the project requires minimal usage of freshwater and bio-swales will be constructed (newly landscape medians) where appropriate to capture runoff and recharge the local groundwater.

Natural World

The project scored 41 out of a possible 182 points in the Natural World category. Two items were excluded in our rating because they did not apply to the project. These were the items associated with farmland, and development on steep slopes..

Climate and Risk

The project scored the least points (48 out of a possible 122) in the Climate and Risk category. This is mainly due to the fact that the rating system requires certain studies to qualify for the points. These studies include a carbon life cycle analysis to estimate greenhouse gas emissions and a climate impact assessment to assess climate threat. These studies are typically not

conducted for a streetscape project such as this one. Climate change, such as a change in intensity of a 50-year storm, was also not considered in our design, so the project did not receive points associated with preparing for long term adaptability. The proposed landscape medians will reduce the pollutants such as carbon monoxide, sulpher oxide and others.

2. Overall critique of the Envision Rating System

The one size fits all philosophy of the Envision sustainability rating system may not accurately assess the sustainability of the majority of projects here at DPW. The system appears to favor larger and/or more comprehensive multi-benefit infrastructure projects and not a standard road project, such as this one.

We strongly feel that maintenance of the sustainable infrastructure should be included in the point system because the cost of this infrastructure will be significantly higher in most cases. There are several items or credits that we feel are not applicable to the typical road or bridge project being administered by Public Works. These items are as follows:

QL1.3 Develop local skills and capabilities
QL2.3 Minimize light pollution
QL3.3 Enhance public space
LD2.1 Pursue by-product synergy opportunities
LD3.2 Address conflicting regulations and policies
RA1.1 Reduce net embodied energy
RA2.1 Reduce energy consumption
RA2.2 Use renewable energy
RA2.3 Commission and monitor energy systems
RA3.2 Reduce potable water consumption
RA3.3 Monitor water systems
CR1.1 Reduce greenhouse gas emissions
CR2.1 Assess climate threat
CR2.2 Avoid traps and vulnerabilities

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Lancaster Landfill Expansion

Core Service Area: Waste Management

Instructions: *Please follow the format provided below, adjusting as necessary for your project. Authors should cite works by others and design manuals/guidelines used, as well as support descriptions with figures/tables, as appropriate.*

Project Title: Lancaster Landfill Expansion Project

Author(s) and Division(s): Paul Alva of EPD; Fellow ISI Evaluators: William Honda of PMD I and Youn Sim WMD

Partnering Agencies: Department of Regional Planning, Office of County Counsel

Project Category(s): (mark all that apply)

___	Multi-benefit	___	Water Supply	___	Flood Control/ Stormwater Capture	_X_	Waste Management	___	Road/ Transportation

Project Type(s): (mark all that apply)

___	Capital project	_X_	Repair and Rehabilitation	___	Emergency operation	___	Private Infrastructure	___	Other

Project Component(s): (mark all that apply)

___	Drainage deficiency mitigation: regional/local	___	Reservoir and basin sediment clean out and management	___	Aesthetic improvement
___	Urban runoff and stormwater quality	___	Recreational opportunity	___	Open space/habitat enhancement
___	Stormwater conservation/recharge	___	Water supply development/enhancement	___	Drinking water quality management
___	Recycled/reclaimed water	___	Desalination	___	Groundwater resource management
___	Pavement technology	___	Road construction/maintenance	_X_	Solid waste
___	Others	___		___	

Infrastructure type(s): (mark all that apply)

___	Public buildings	___	Airport	___	Bridges
___	Flood control systems (all major and appurtenant facilities)	___	Spreading grounds	___	Seawater barriers
___	Drinking water infrastructure	___	Streets and highways	___	Street lighting
___	Traffic signals	___	Transit	___	Urban runoff /Stormwater quality BMP

_X_	Others, Private solid waste disposal site	___		___	

EXECUTIVE SUMMARY – Overall summary of project and rating results (one page max)

The Lancaster Landfill is an existing municipal solid waste landfill located in the County unincorporated area approximately 1.5 miles north of City of Lancaster. In 2006, the landfill owner and operator, Waste Management, Inc. (WM), filed an application for a new Conditional Use Permit (CUP) to increase the maximum daily intake of solid waste from 1,700 to 3,000 tons per day; allow 2,100 tons per day of materials for onsite reuse; extend the landfill life by 30 years. The success of the expansion project would provide 12 million tons of solid waste disposal capacity to the County.


Lancaster Landfill Aerial View

The overall area of the landfill is 276 acres, of which 209 acres is designated for disposal of trash. The site is situated on essentially level, desert terrain and surrounded by sparsely scattered single-family residences, mobile homes, residential tract homes, light industrial/commercial developments, and open space. All fill is currently at or above the elevation of the surrounding terrain.

Since 2006, Public Works, Regional Planning, and County Council worked closely together in negotiating the new CUP conditions with WM; reviewed environmental, technical, and financial documents; investigated traffic conditions from the Los Angeles metro area, up north along the Interstate 5 Freeway and State Route 14, and on the surrounding streets of the landfill; and conducted extensive research into finding solutions to address concerns expressed by the surrounding communities and Regional Planning Commission members.

On December 14, 2011, Regional Planning Commission approved the new CUP with 125 comprehensive conditions and more than 60 additional environmental mitigation measures. Examples of CUP conditions include requirements for maximizing landfill capacity using innovative techniques; all solid waste collection trucks and transfer trucks to run on alternative fuel; development of a conversion technology facility; continued operation of the Antelope Valley Environmental Collection Center to manage household hazardous waste; and maintenance of the landfill's environmental protection and control system in perpetuity. Furthermore, the CUP secured an annual average of $500,000 for programs and improvements directly benefiting surrounding communities; $1.4 million for funding programs administered by

County Departments; and $3 million for the General Fund for the next 30 years.

Based on the Envision Sustainable Infrastructure Rating System, the project received an overall sustainability score of 505 out of 809 available points, or 62% (see Analysis of Rating Results below for details).

BACKGROUND – Why was the project done?
Project owner and location:
The landfill is owned and operated by Waste Management, Inc. The site is located in Los Angeles County unincorporated area, approximately 1.5 miles North of City of Lancaster, CA.

1. Pre-project condition, existing practice:
   The project is an existing municipal solid waste landfill and has been in operation since 1954.

2. Project need: current deficiency/inefficiency identified:
   The project operates under a 1998 Conditional Use Permit (CUP), which is set to expire on August 1, 2012. The design life of the landfill, however, has 12 million tons of remaining capacity.

PROJECT DESCRIPTION – What was done?
1. Project details
   a. Project objectives and activities:
      In permitting the landfill, the team consisted of permitting and regulatory agencies, aimed to work with WM to obtain the greatest benefits to residents of the County while minimizing impacts to surrounding communities. The result is a new CUP with 125 comprehensive conditions and more than 60 additional environmental mitigation measures to ensure safe and environmentally sound landfill operations. Included in the CUP are funding provisions that directly benefit local residents as well as County programs.

   b. Sustainable practices utilized or integrated into the existing practice
      The CUP requires the landfill operator to either provide funding for or develop a Conversion Technology Facility for the long-term disposal needs of the Antelope Valley as well as fund three studies by an independent consultant long-term to assess the future disposal needs of the Antelope Valley. Additionally, the CUP requires all light-duty vehicles, transfer trucks, and waste collection trucks that utilize the landfill to be fueled by electricity, natural gas, biogas, or renewable diesel.

c. Funding details
The project is funded through the County's Solid Waste Management Fund, designated for Countywide solid waste management planning. The project generates an annual average of $500,000 for programs and improvements directly benefiting surrounding communities; $1.4 million for funding programs administered by County Departments; and $3 million for the General Fund for the next 30 years.

ANALYSIS OF RATING RESULTS

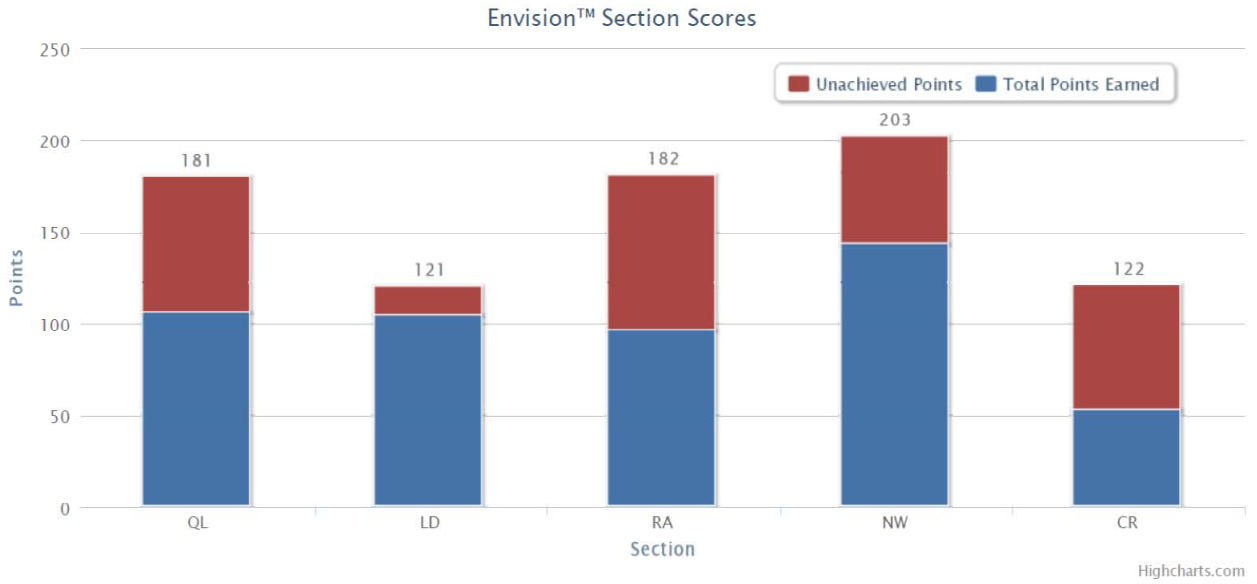
1. EnvISIon summary report

a. Original score report

b. Alternative score report

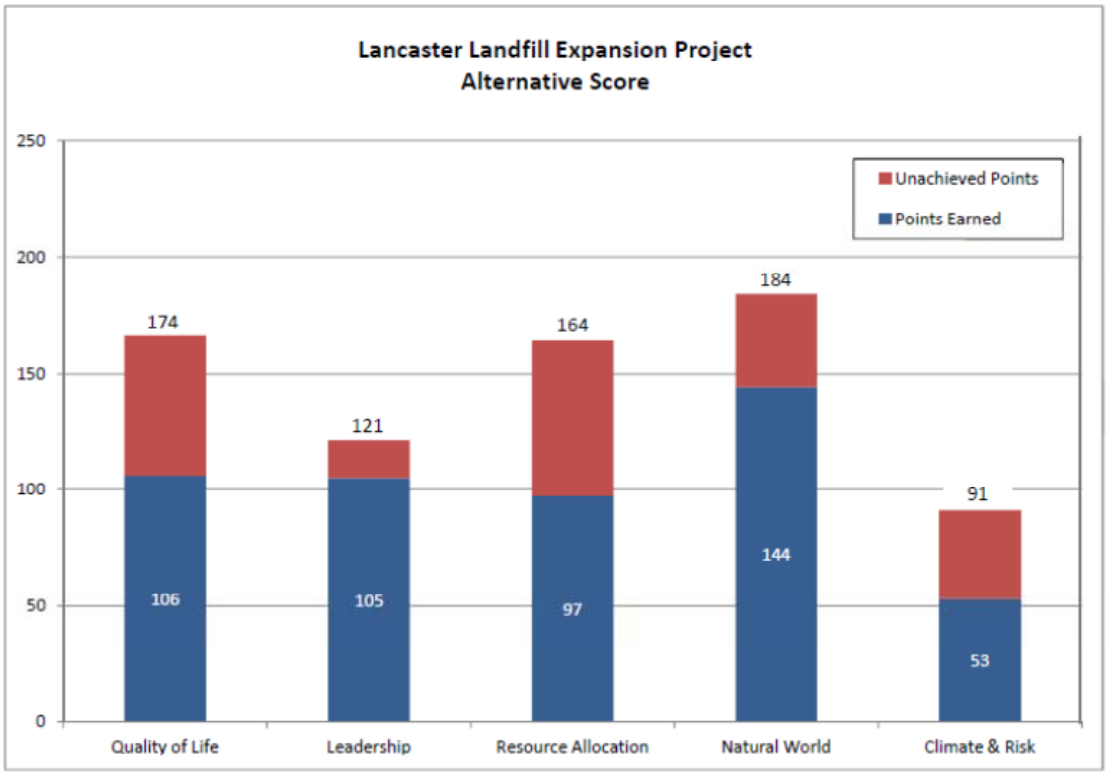
Section Totals Summary

Section	Maximum Possible Score	Section Points	Innovation Points	Total Points Earned
QL	181	101	5	106
LD	121	101	4	105
RA	182	93	4	97
NW	203	140	4	144
CR	122	51	2	53
Total Project Points	**809**	**486**	**19**	505



Alternative Score
Sustainable Infrastructure Rating
Lancaster Landfil Expansion Project

Section	Max. Possible Points	Section Points	Innovation Points	Total Points Earned	% Achieved
Quality of Life	166	101	5	106	64%
Leadership	121	101	4	105	87%
Resource Allocation	164	93	4	97	59%
Natural World	184	140	4	144	78%
Climate & Risk	91	51	2	53	58%
Total Project Points	726	486	19	505	70%



2. Comparison among categories

Under which categories did your project gain the most and least points and why?

The project rated highest in the Leadership category achieving 87 percent of available points. This is the result of listening to and addressing the concerns of local residents. The Climate and Risk category was rated the lowest achieving 43% of available points. Relatively low rating is attributed to not having performed a life cycle analysis nor including a Climate Impact Assessment & Adaptation Plan.

3. Analysis under each category (strengths and weakness)

Which questions did you get higher and lower points and why? Discuss under each category.

k. Quality of Life

HIGH: Enhancing Public Health and Safety (QL-2.1) – 16/16 points.

The CUP requires health and safety standards higher than those set by federal and State regulatory agencies.

LOW: Encourage Alternative Modes of Transportation (QL-2.5) – 0/15 points.

The remote location of the project precludes the need for public transportation.

l. Leadership

HIGH: Provide for Stakeholder Involvement (LD-1.4) – 14/14 points.

Stakeholders were provided opportunities to express concerns, and the project team took care to address their concerns in the CUP. A community advisory committee will be appointed by the Board of Supervisors and funded by the landfill operator to facilitate communications between the landfill and surrounding communities.

LOW: Establish A Sustainability Management System (LD-1.2) – 4/14 points.

The project did not have in place organizational policies, authorities, mechanisms and business processes for improving sustainable performance.

m. Resources Allocation

HIGH: Commission and Monitor Energy Systems (RA-2.3) – 11/11 Points.

The landfill operator is required to monitor and maintain environmental and protection and control systems in perpetuity, or when Public Works determines that the landfill no longer poses a threat to public health and safety and the environment.

LOW: Support Sustainable Procurement Practices (RA-1.2) – 2/9 Points.

The landfill does not have any policies in place that would require procurement of materials from suppliers with sustainable policies and practices.

n. Natural World

HIGH: Manage Stormwater (NW-2.1) – 21/21 Points.

The project protects underground water with liners and leachate collection system at the bottom of the landfill. On the surface, storm water is collected at sedimentation ponds for percolation, and the collected water is reused for dust control onsite.

LOW: Maintain Wetland and Surface Water Function (NW-3.4) – 0/19 Points.

No points could be obtained for the criteria because there are no

streams, wetlands, or water bodies near the project to be maintained or restored.

o. Climate and Risk

HIGH: Prepare for Short-Term Hazards (CR-2.4) – 17/21 Points.

The landfill operator is required to design the facility for 1 in 100-year storm event and the site stability is required to be reassessed following a 5.0 magnitude earthquake.

LOW: Reduce Greenhouse Gas Emissions (CR-1.1) – 0/25 Points.

No points could be obtained for the criteria because a life-cycle analysis could not be performed.

4. Possible improvements to be made

Content: What are the possible changes/additions that could be made in order to make this project a more sustainable infrastructure?

The CUP clearly specifies the landfill operator's responsibilities during the times of operation as well as closure and postclosure. However, because a nexus between CUP conditions and negative impacts of the project must be established, the CUP cannot easily incorporate restorative practices or requirements that exceed far beyond regulatory standards. Additionally, a CUP cannot be easily modified to address future changes in County's or Public Works' sustainability policies. Therefore, we recommend future CUPs to require the landfill operator and Public Works to enter into an agreement whereby conditions that pertain to sustainable practices may be stipulated. The agreement may be reviewed every 5 or 10 years.

Sustainable practices that could be incorporated in an agreement for future landfill expansion projects include use of renewable energy, greater energy reduction, and procurement of materials from manufacturers that implement sustainable practices.

5. Overall critic of the rating system

Content: what changes to Envision would you recommend for a fair rating of the type (i.e., road, stormdrains, and dams) and practice (capital or rehab project) your project represents?

- It is unclear whether the system's benchmarks are based on uniform regulatory requirements. For example, it would be very difficult for projects in California, which has one of the nation's most stringent regulations, to gain innovative points or score high in those categories that pertain to regulations and standards, such as Climate & Risk 1.2 and Resource Allocation 2.1. Perhaps bonus points could be awarded to projects in States and regions with more stringent regulatory requirements.

- ISI should provide standardized tools, such as life-cycle carbon analysis, energy reduction, heat island effects, etc., to minimize bias, errors, and confusion.

- Criteria that award points based on the percent reductions resulting from implementing a practice should be revised to recognize practices that do not create problems. For example, in Manage Heat Island Effects section (Climate and Risk Assessment 2.5), points should be awarded to projects that do not alter the natural environment, rather than penalizing them for not reducing heat island effects.

- Questions should take into consideration the density of population where a project is located. For example, Quality of Life would be given more weight than other categories if a project is located in a highly populated area. Conversely, if a project is located in an environmentally sensitive area, more weight would be given within the Natural World category.

- Flexibility should be built into the evaluation system to accommodate unique projects, such as allowing certain criteria to be excluded if determined non-applicable. For example, the evaluation is most applicable to construction of new projects. Expansion of an existing facility may unfairly receive low ratings due to non-applicable criteria and poor wording of questions.

- ISI should implement a grading scale, similar to grades on a report card, which is more meaningful and useful than percentage of points achieved.

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Appendix A: *EnvISIon*™ Rating System Credit Lists

Envision™ Structure

QUALITY OF LIFE
13 Credits

1 PURPOSE
QL1.1 Improve Community Quality of Life
QL1.2 Stimulate Sustainable Growth & Development
QL1.3 Develop Local Skills & Capabilities

2 WELLBEING
QL2.1 Enhance Public Health & Safety
QL2.2 Minimize Noise and Vibration
QL2.3 Minimize Light Pollution
QL2.4 Improve Community Mobility & Access
QL2.5 Encourage Alternative Modes of Transportation
QL2.6 Improve Accessibility, Safety, & Wayfinding

3 COMMUNITY
QL3.1 Preserve Historic & Cultural Resources
QL3.2 Preserve Views & Local Character
QL3.3 Enhance Public Space

QL0.0 Innovate or Exceed Credit Requirements

LEADERSHIP
10 Credits

1 COLLABORATION
LD1.1 Provide Effective Leadership & Commitment
LD1.2 Establish A Sustainability Management System
LD1.3 Foster Collaboration & Teamwork
LD1.4 Provide for Stakeholder Involvement

2 MANAGEMENT
LD2.1 Pursue By-Product Synergy Opportunities
LD2.2 Improve Infrastructure Integration

3 PLANNING
LD3.1 Plan For Long-Term Monitoring & Maintenance
LD3.2 Address Conflicting Regulations & Policies
LD3.3 Extend Useful Life

LD0.0 Innovate or Exceed Credit Requirements

RESOURCE ALLOCATION
14 Credits

1 MATERIALS
RA1.1 Reduce Net Embodied Energy
RA1.2 Support Sustainable Procurement Practices
RA1.3 Use Recycled Materials
RA1.4 Use Regional Materials
RA1.5 Divert Waste From Landfills
RA1.6 Reduce Excavated Materials Taken Off Site
RA1.7 Provide For Deconstruction & Recycling

2 ENERGY
RA2.1 Reduce Energy Consumption
RA2.2 Use Renewable Energy
RA2.3 Commission & Monitor Energy Systems

3 WATER
RA3.1 Protect Fresh Water Availability
RA3.2 Reduce Potable Water Consumption
RA3.3 Monitor Water Systems

RA0.0 Innovate or Exceed Credit Requirements

NATURAL WORLD
15 Credits

1 SITING
NW1.1 Preserve Prime Habitat
NW1.2 Protect Wetlands & Surface Water
NW1.3 Preserve Prime Farmland
NW1.4 Avoid Adverse Geology
NW1.5 Preserve Floodplain Functions
NW1.6 Avoid Unsuitable Development on Steep Slopes
NW1.7 Preserve Greenfields

2 LAND+WATER
NW2.1 Manage Stormwater
NW2.2 Reduce Pesticide & Fertilizer Impacts
NW2.3 Prevent Surface & Groundwater Contamination

3 BIODIVERSITY
NW3.1 Preserve Species Biodiversity
NW3.2 Control Invasive Species
NW3.3 Restore Disturbed Soils
NW3.4 Maintain Wetland & Surface Water Functions

NW0.0 Innovate or Exceed Credit Requirements

CLIMATE AND RISK
8 Credits

1 EMISSIONS
CR1.1 Reduce Greenhouse Gas Emissions
CR1.2 Reduce Air Pollutant Emissions

2 RESILIENCE
CR2.1 Assess Climate Threat
CR2.2 Avoid Traps & Vulnerabilities
CR2.3 Prepare For Long-Term Adaptability
CR2.4 Prepare For Short-Term Hazards
CR2.5 Manage Heat Island Effects

CR0.0 Innovate or Exceed Credit Requirements

Envision™ Sustainable Infrastructure Rating System

<no name>

Report (All Sections)

See only Notes

	Section and Objective Numbers	Objectives	Required/ Applicable?	Level Of Achievement	Score	Max Available Points
QUALITY OF LIFE						
QL1	QL1.1	**Improve community quality of life.** Improve the net quality of life of all communities affected by the project and mitigate negative impacts to communities.	----	**No Added Value**		**25**
			Notes:			
	QL1.2	**Stimulate sustainable growth and development.** Support and stimulate sustainable growth and development, including improvements in job growth, capacity building, productivity, business attractiveness and livability.	----	**No Added Value**		**16**
			Notes:			
	QL1.3	**Develop local skills and capabilities.** Expand the knowledge, skills and capacity of the community workforce to improve their ability to grow and develop.	----	**No Added Value**		**15**
			Notes:			
QL2	QL2.1	**Enhance public health and safety.** Take into account the health and safety implications of using new materials, technologies or methodologies above and beyond meeting regulatory requirements.	----	**No Added Value**		**16**
			Notes:			
	QL2.2	**Minimize noise and vibration.** Minimize noise and vibration generated during construction and in the operation of the constructed works to maintain and improve community livability.	----	**No Added Value**		**11**
			Notes:			
	QL2.3	**Minimize light pollution.** Prevent excessive glare, light at night, and light directed skyward to conserve energy and reduce obtrusive lighting and excessive glare.	----	**No Added Value**		**11**
			Notes:			

	QL2.4	**Improve community mobility and access.** Locate, design and construct the project in a way that eases traffic congestion, improves mobility and access, does not promote urban sprawl, and otherwise improves community livability.	----	No Added Value		14
			Notes:			
	QL2.5	**Encourage alternative modes of transportation.** Improve accessibility to non-motorized transportation and public transit. Promote alternative transportation and reduce congestion.	----	No Added Value		15
			Notes:			
	QL2.6	**Improve site accessibility, safety and wayfinding.** Improve user accessibility, safety, and wayfinding of the site and surrounding areas.	----	No Added Value		15
			Notes:			
QL3	QL3.1	**Preserve historic and cultural resources.** Preserve or restore significant historical and cultural sites and related resources to preserve and enhance community cultural resources.	----	No Added Value		16
			Notes:			
	QL3.2	**Preserve views and local character.** Design the project in a way that maintains the local character of the community and does not have negative impacts on community views.	----	No Added Value		14
			Notes:			
	QL3.3	**Enhance public space.** Improve existing public space including parks, plazas, recreational facilities, or wildlife refuges to enhance community livability.	----	No Added Value		13
			Notes:			
QL0	QL0.0	**INNOVATE OR EXCEED CREDIT REQUIREMENTS.** To reward exceptional performance beyond the expectations of the system as well as the application of innovative methods which advance the state of the art for sustainable infrastructure.	----	PARTIAL		8
			Notes:			

LEADERSHIP

LD1	LD1.1	**Provide effective leadership and commitment.** Provide effective leadership and commitment to achieve project sustainability goals.	----	No Added Value		17
			Notes:			
	LD1.2	**Establish a sustainability management system.** Create a project management system that can manage the scope, scale and complexity of a project seeking to improve sustainable performance.	----	No Added Value		14
			Notes:			
	LD1.3	**Foster collaboration and teamwork.** Eliminate conflicting design elements, and optimize system by using integrated design and delivery methodologies and collaborative processes.	----	No Added Value		15
			Notes:			
	LD1.4	**Provide for stakeholder involvement.** Establish sound and meaningful programs for stakeholder identification, engagement and involvement in project decision making.	----	No Added Value		14
			Notes:			
LD2	LD2.1	**Pursue by-product synergy opportunities.** Reduce waste, improve project performance and reduce project costs by identifying and pursuing opportunities to use unwanted by-products or discarded materials and resources from nearby operations.	----	No Added Value		15
			Notes:			
	LD2.2	**Improve infrastructure integration.** Design the project to take into account the operational relationships among other elements of community infrastructure which results in an overall improvement in infrastructure efficiency and effectiveness.	----	No Added Value		16
			Notes:			

LD3	LD3.1	**Plan for long-term monitoring and maintenance.** Put in place plans and sufficient resources to ensure as far as practical that ecological protection, mitigation and enhancement measures are incorporated in the project and can be carried out.	----	No Added Value		10
			Notes:			
	LD3.2	**Address conflicting regulations and policies.** Work with officials to Identify and address laws, standards, regulations or policies that may unintentionally create barriers to implementing sustainable infrastructure.	----	No Added Value		8
			Notes:			
	LD3.3	**Extend useful life.** Extend a project s useful life by designing the project in a way that results in a completed works that is more durable, flexible and resilient.	----	No Added Value		12
			Notes:			
LD0	LD0.0	**INNOVATE OR EXCEED CREDIT REQUIREMENTS.** To reward exceptional performance beyond the expectations of the system as well as the application of innovative methods which advance the state of the art for sustainable infrastructure.	----	PARTIAL		6
			Notes:			

RESOURCE ALLOCATION

RA1	RA1.1	**Reduce net embodied energy.** Conserve energy by reducing the net embodied energy of project materials over the project life.	----	No Added Value		18
			Notes:			
	RA1.2	**Support sustainable procurement practices.** Obtain materials and equipment from manufacturers and suppliers who implement sustainable practices.	----	No Added Value		9
			Notes:			
	RA1.3	**Use recycled materials.** Reduce the use of virgin materials and avoid sending useful materials to landfills by specifying reused materials, including structures, and material with recycled content.	----	No Added Value		14
			Notes:			
	RA1.4	**Use regional materials.** Minimize transportation costs and impacts and retain regional benefits through specifying local sources.	----	No Added Value		10
			Notes:			
	RA1.5	**Divert waste from landfills.** Reduce waste, and divert waste streams away from disposal to recycling and reuse.	----	No Added Value		11
			Notes:			
	RA1.6	**Reduce excavated materials taken off site.** Minimize the movement of soils and other excavated materials off site to reduce transportation and environmental impacts.	----	No Added Value		6
			Notes:			
	RA1.7	**Provide for deconstruction and recycling.** Encourage future recycling, up-cycling, and reuse by designing for ease and efficiency in project disassembly or deconstruction at the end of its useful life.	----	No Added Value		12
			Notes:			
RA2	RA2.1	**Reduce energy consumption.** Conserve energy by reducing overall operation and maintenance energy consumption throughout the project life cycle.	----	No Added Value		18
			Notes:			
	RA2.2	**Use renewable energy.** Meet energy needs through renewable energy sources.	----	No Added Value		20

			Notes:			
	RA2.3	**Commission and monitor energy systems.** Ensure efficient functioning and extend useful life by specifying the commissioning and monitoring of the performance of energy systems.	----	No Added Value		11
			Notes:			
RA3	RA3.1	**Protect fresh water availability.** Reduce the negative net impact on fresh water availability, quantity and quality.	----	No Added Value		21
			Notes:			
	RA3.2	**Reduce potable water consumption.** Reduce overall potable water consumption and encourage the use of greywater, recycled water, and stormwater to meet water needs.	----	No Added Value		21
			Notes:			
	RA3.3	**Monitor water systems.** Implement programs to monitor water systems performance during operations and their impacts on receiving waters.	----	No Added Value		11
			Notes:			
RA0	RA0.0	**INNOVATE OR EXCEED CREDIT REQUIREMENTS.** To reward exceptional performance beyond the expectations of the system as well as the application of innovative methods which advance the state of the art for sustainable infrastructure.	----	PARTIAL		9
			Notes:			

NATURAL WORLD

NW1	NW1.1	**Preserve prime habitat.** Avoid placing the project and the site compound/temporary works on land that has been identified as of high ecological value or as having species of high value.	----	No Added Value		18
			Notes:			
	NW1.2	**Protect wetlands and surface water.** Protect, buffer, enhance and restore areas designated as wetlands, shorelines, and waterbodies by providing natural buffer zones, vegetation and soil protection zones.	----	No Added Value		18
			Notes:			
	NW1.3	**Preserve prime farmland.** Identify and protect soils designated as prime farmland, unique farmland, or farmland of statewide importance.	----	No Added Value		15
			Notes:			
	NW1.4	**Avoid adverse geology.** Avoid development in adverse geologic formations and safeguard aquifers to reduce natural hazards risk and preserve high quality groundwater resources.	----	No Added Value		5
			Notes:			
	NW1.5	**Preserve floodplain functions.** Preserve floodplain functions by limiting development and development impacts to maintain water management capacities and capabilities.	----	No Added Value		14
			Notes:			
	NW1.6	**Avoid unsuitable development on steep slopes.** Protect steep slopes and hillsides from inappropriate and unsuitable development in order to avoid exposures and risks from erosion and landslides, and other natural hazards.	----	No Added Value		6
			Notes:			
	NW1.7	**Preserve greenfields.** Conserve undeveloped land by locating projects on previously developed greyfield sites and/or sites classified as brownfields.	----	No Added Value		23
			Notes:			
NW2	NW2.1		----	No Added Value		21

		Manage stormwater. Minimize the impact of infrastructure on stormwater runoff quantity and quality.	Notes:			
	NW2.2	**Reduce pesticide and fertilizer impacts.** Reduce non-point source pollution by reducing the quantity, toxicity, bioavailability and persistence of pesticides and fertilizers, or by eliminating the need for the use of these materials.	----	**No Added Value**		**9**
			Notes:			
	NW2.3	**Prevent surface and groundwater contamination.** Preserve fresh water resources by incorporating measures to prevent pollutants from contaminating surface and groundwater and monitor impacts over operations.	----	**No Added Value**		**18**
			Notes:			
NW3	**NW3.1**	**Preserve species biodiversity.** Protect biodiversity by preserving and restoring species and habitats.	----	**No Added Value**		**16**
			Notes:			
	NW3.2	**Control invasive species.** Use appropriate non-invasive species and control or eliminate existing invasive species.	----	**No Added Value**		**11**
			Notes:			
	NW3.3	**Restore disturbed soils.** Restore soils disturbed during construction and previous development to bring back ecological and hydrological functions.	----	**No Added Value**		**10**
			Notes:			
	NW3.4	**Maintain wetland and surface water functions.** Maintain and restore the ecosystem functions of streams, wetlands, waterbodies and their riparian areas.	----	**No Added Value**		**19**
			Notes:			
NW0	**NW0.0**	**INNOVATE OR EXCEED CREDIT REQUIREMENTS.** To reward exceptional performance beyond the expectations of the system and the application of innovative methods which advance the state of the art for sustainable infrastructure.	----	**PARTIAL**		**8**
			Notes:			

CLIMATE AND RISK

CR1	**CR1.1**	**Reduce greenhouse gas emissions.** Conduct a comprehensive life-cycle carbon analysis and use this assessment to reduce the anticipated amount of net greenhouse gas emissions during the life cycle of the project, reducing project contribution to climate change.	----	**No Added Value**		**25**
			Notes:			
	CR1.2	**Reduce air pollutant emissions.** Reduce the emission of six criteria pollutants; particulate matter (including dust), ground level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, lead, and noxious odors.	----	**No Added Value**		**15**
			Notes:			
CR2	**CR2.1**	**Assess climate threat.** Develop a comprehensive Climate Impact Assessment and Adaptation Plan.	----	**No Added Value**		**15**
			Notes:			
	CR2.2	**Avoid traps and vulnerabilities.** Avoid traps and vulnerabilities that could create high, long-term costs and risks for the affected communities.	----	**No Added Value**		**20**
			Notes:			
	CR2.3	**Prepare for long-term adaptability.** Prepare infrastructure systems to be resilient to the consequences of long-term climate change, perform adequately under altered climate conditions, or adapt to other long-term change scenarios.	----	**No Added Value**		**20**
			Notes:			

	CR2.4	**Prepare for short-term hazards.** Increase resilience and long-term recovery prospects of the project and site from natural and man-made short-term hazards.	----	**No Added Value**		**21**
			Notes:			
	CR2.5	**Manage heat islands effects.** Minimize surfaces with a high solar reflectance index (SRI) to reduce localized heat accumulation and manage microclimates.	----	**No Added Value**		**6**
			Notes:			
CR0	CR0.0	**INNOVATE OR EXCEED CREDIT REQUIREMENTS.** To reward exceptional performance beyond the expectations of the system as well as the application of innovative methods which advance the state of the art for sustainable infrastructure.	----	**PARTIAL**		**5**
			Notes:			

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