DRAFT
ENVIRONMENTAL IMPACT REPORT
CITY OF HERCULES
HERCULES NEW TOWN CENTER

TECHNICAL APPENDICES

State Clearinghouse No. 2007062002

Prepared by:

RBF Consulting
500 Ygnacio Valley Road, Suite 270
Walnut Creek, CA 94596

Prepared for:

City of Hercules Redevelopment Agency
111 Civic Drive
Hercules, CA 94547

October 2008

LIST OF APPENDICES

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Notice of Preparation and Public Comments

Notice of Preparation

TO: Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 212
Sacramento, CA 95814

Responsible and Trustee Agencies, Utility Providers, Organizations, Neighboring Property Owners and Interested Parties

FROM: City of Hercules
111 Civic Drive
Hercules. CA 94547
Contact: Steve Lawton

Subject: Notice of Preparation of an Environmental Impact Report

The City of Hercules Redevelopment Agency (RDA) will be the lead agency and will prepare an environmental impact report (EIR) for the Hercules New Town Center (HNTC) project. The EIR will study potential impacts associated with proposed amendments to the Hercules General Plan and Zoning Ordinance relevant to the HNTC planning area and Phase I of the HNTC project. This Notice of Preparation is sent pursuant to Section 15082 of the California Environmental Quality Act (CEQA) Guidelines to announce the initiation of the EIR process and to solicit comments from responsible and trustee agencies, utility providers, organizations, neighboring property owners, and interested parties concerning the scope of issues to be addressed in the EIR. Refer to the Probable Environmental Effects listed below to determine whether your concerns have already been identified. Please focus your comments on the project's potential environmental impacts and recommendations for methods of avoiding, reducing or otherwise mitigating those impacts. If you are a governmental agency with discretionary authority over initial or subsequent aspects of this project, describe that authority and provide comments regarding potential environmental effects that are germane to your agency's area of responsibility.

Project Title: Hercules New Town Center Environmental Impact Report

Project Location: The HNTC planning area is located within the City of Hercules (City), in Contra Costa County, California, and is composed of seven parcels. Six of the parcels that are located southeast of the Interstate 80 (I-80) and State Route 4 (SR 4) interchange and one parcel is located immediately southwest of the interchange. Together the parcels total approximately 35 acres that are generally bounded by SR 4 to the north, Sycamore Avenue, Willow Avenue and railroad tracks to the south, Palm Avenue to the east, and San Pablo Avenue to the west. Refer to the attached project location map.

Project Description: The project consists of two elements. First, the City and the Hercules New Town Center LLC (project sponsor) propose amendments to the Hercules General Plan (General Plan) and Zoning Ordinance to create a "New Town Center" (NTC) mixed-use land use designation and zoning district that would apply to the HNTC planning area. Second, the project sponsor proposes redevelopment of two parcels within the planning area (Phase I Project).

The overall intent of the NTC mixed-use land use designation and zoning district is to create a "Transit-Oriented Town Center" that has a pedestrian and transit friendly mix of residential, commercial, office, and public and quasi-public uses that are designed in a more urban pattern of development with buildings set close to defined streets in the center of town. The proposed amendments to the General Plan and Zoning Ordinance would establish allowable uses and development intensities for the parcels that comprise the HNTC planning area. The City envisions that the parcels within the planning area would be transformed from their current use of empty lots, parking lots, storage lots, off-ramps for SR 4, and low-density industrial uses into a new destination downtown that serves as the central gathering, shopping, living and working place for Hercules

residents and others from around the region. Each parcel in this category would be allowed only residential uses, only non-residential uses or a mix of residential and non-residential uses. The intensity for non-residential uses for each parcel would not exceed a floor area ratio (FAR) of 2.0. In addition, the density for residential uses for each parcel would not exceed 75 dwelling units per acre. The average intensity and density of development on the parcels in the NTC designation would be approximately 1.0 FAR for non-residential uses and 60 units per acre for residential uses.

The Phase I Project proposes redevelopment of Parcel 1 (PNR parcel) located west of I-80 and northeast of the intersection of San Pablo and Sycamore Avenues. The 6.62-acre PNR parcel is currently occupied by the existing Hercules Transit Center and would be developed with a mix of residential, retail and office uses, comprising up to 400 townhouses, flats, live work units and lofts, 60,000 square feet of retail space and 80,000 square feet of office space. Proposed buildings would range in height from 55 to 85 feet. Parking for up to 1,160 vehicles would be provided in surface parking areas and within two parking structures. Public space is a key feature of the proposed redevelopment of the PNR parcel. Two public plazas, one at the center of the site and one to the south, would provide opportunities for outdoor seating to support retail uses, and would serve as public gathering spaces. Private space would be provided at the center of each of the large buildings in a courtyard. The courtyards would be shared by project residents and accessible from multiple points.

To facilitate redevelopment of the PNR parcel, the Phase I Project proposes relocation of the existing Hercules Transit Center to Parcel 2 (C1 parcel) within the HNTC planning area located on Willow Avenue, immediately south of SR 4 and generally east of the existing on and off ramps for SR 4. Initially, the C1 parcel would be developed to replace the facilities provided at the existing Hercules Transit Center on the PNR parcel; however, development consistent with the HNTC Development Program outlined in the above table may occur in the future. The new transit center would occupy the majority of the 8.69-acre C1 parcel and would consist of a parking lot with a minimum of 248 parking spaces, a bus terminal area with 13 bus bays, one covered passenger shelter, two restroom facilities for bus drivers, and a variety of amenities for passengers, such as six bicycle lockers, one bicycle locking rack, and a coin-operated public telephone.

Currently, the PNR parcel is owned by the Bay Area Rapid Transit District (BART) and the C1 parcel is owned by the City RDA. An Exchange Option Agreement between BART and the City RDA was approved in 2004 establishing the framework under which a future exchange of the two parcels could occur provided that all conditions of the agreement are met to the satisfaction of both parties, including land use approvals associated with the Phase I Project. The EIR will cover all state and local government discretionary approvals that have been requested, and those that may be required to construct or implement the proposed project, such as BART approval of the exchange of the PNR parcel for the C1 parcel.

Project Objectives: The following objectives have been identified for the HNTC project:

- Create a "Transit-Oriented Town Center" consisting of a relatively intense pattern of building in the center of town and a mix of residential, commercial, office, and public and quasi- public uses.
- Develop or construct affordable housing in compliance with state law.
- Establish commercial and retail development in the area around Sycamore and San Pablo Avenues and along SR 4.
- Create a vibrant, urbanized place for shopping, working and living at the core of Hercules.
- Emphasize a fine-grained mix of uses around a new "Town Square."
- Develop or redevelop land by private enterprise or public agencies for purposes and uses consistent with the objectives of the Redevelopment Plan for the Dynamite Project Area.

- Closely coordinate with the Bay Area Rapid Transit District (BART) and the Western Contra Costa County Transit Authority (WestCAT) to increase the capacity and service levels for WestCAT express service to the El Cerrito del Norte BART station.

- Improve the utilization of the Hercules Transit Center automobile parking lot to focus on supporting regional transit.

- Develop according to principles of transit-oriented development and urban design identified in the Central Hercules Plan.

Probable Environmental Effects: The purpose of the EIR is to provide full disclosure, in advance, of the potential environmental impacts that would result from implementation of the proposed project. The analysis in the EIR will be prepared at a program-level for the proposed amendments to the General Plan and Zoning Ordinance, and at a project-level for the Phase I Project. The EIR will analyze the extent to which the project design and alternatives would result in significant environmental impacts and will identify appropriate project modifications or mitigation measures to reduce or eliminate these impacts. Issues that will be examined include the following:

- Aesthetic impacts associated with the development of a mixed-use "Town Center" in the planning area.

- Long-term, operational air quality impacts from project-related traffic and placement of residential land uses in close proximity to I-80 and SR 4, and short-term, temporary impacts from project construction.

- Impacts on biological resources, including plant and animal species.

- Impacts to unknown cultural resources.

- Impacts related to hazardous materials that may be present in soil and groundwater within the planning area.

- Long-term, operational noise and vibration impacts associated with project-related traffic and placement of residential land uses in close proximity to I-80 and SR 4, and short-term, temporary impacts from project construction.

- Impacts resulting from the inducement of population growth.

- Public service, utility and service system impacts from intensification of land uses within the planning area.

- Local and regional traffic, transportation, circulation, and parking impacts near the project and at nearby intersections and street segments, as well as access to and along local segments of I-80.

Scoping: The City invites written comments on the scope of the EIR and alternatives that should be considered. Due to the time limits mandated by state law, your response must be sent at the earliest possible date, **but no later than 30 days after receipt of this notice.** Written comments should be sent to Steve Lawton, Community Development Director, at the mailing address above by July 2, 2007.

Comments should focus on identifying specific environmental impacts to be evaluated during the EIR process and suggesting project modifications or alternatives that would be less environmentally damaging while

achieving similar project objectives. Scoping comments should focus on issues and alternatives to be studied, not on expressing a preference for a particular alternative.

The City will hold two identical public scoping meetings on Tuesday, June 19, 2007, at 3:00 p.m. and again at 7:00 p.m. in the Hercules City Council Chambers, 111 Civic Drive, Hercules, CA. Anyone may attend either meeting, however, the afternoon meeting is directed toward public agencies and the evening meeting is directed toward the general public. The meetings will be advertised in the West Contra Costa County Times. The building used for the scoping meetings is accessible to persons with disabilities.

If you wish to be placed on a mailing list to receive further information as the project progresses, please contact Steve Lawton at the mailing address above.

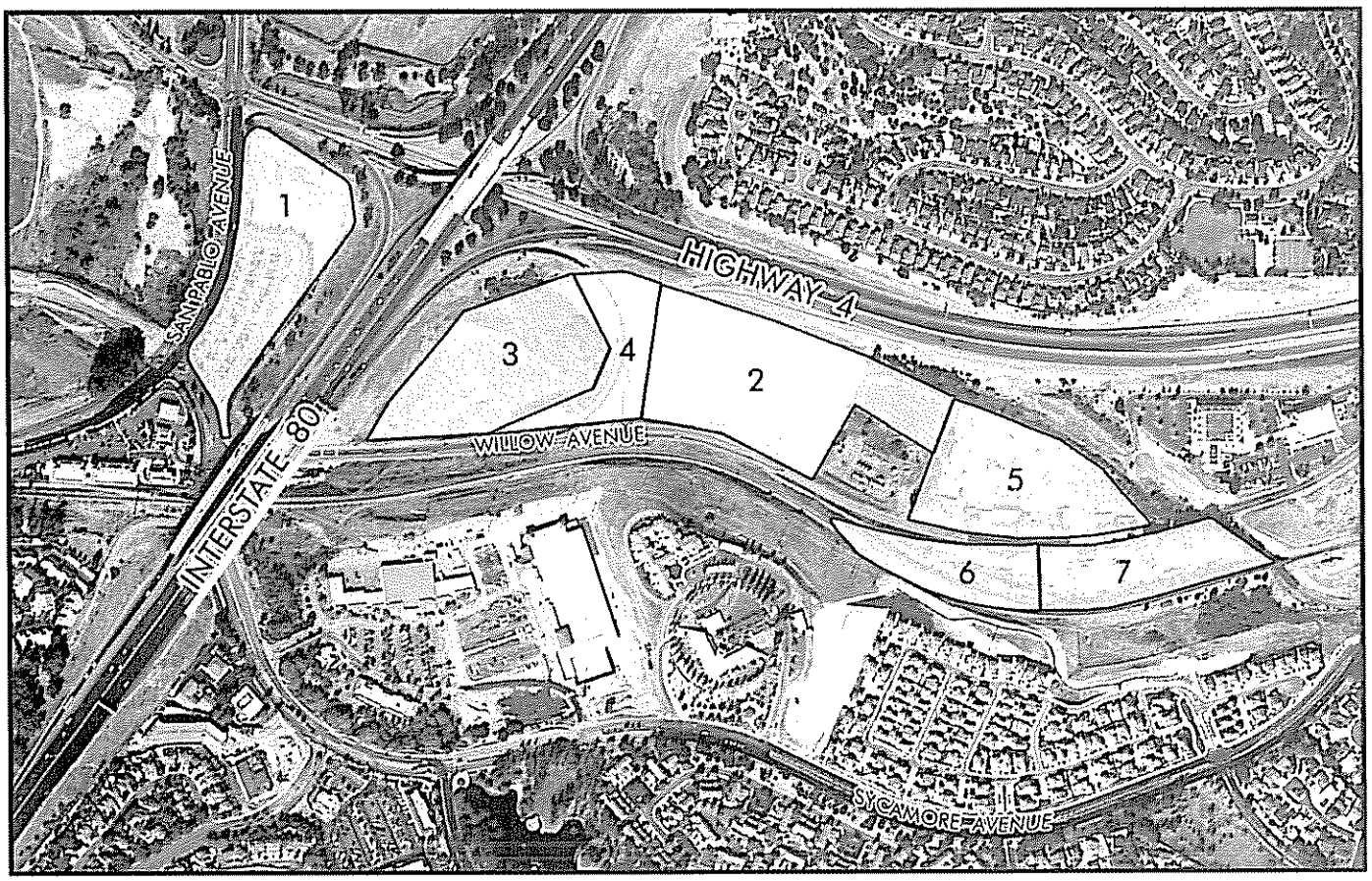
Date: 30 MAY 2007

Signature: Stephen Lawton

Title: Steve Lawton, Community Development Director

Telephone: (510) 799-8233

Reference: California Code of Regulations, Title 14, (State CEQA Guidelines) Sections 15082(A), 15103, 15375



Source: maps.live.com; accessed on May 30, 2007

Map Key	Parcel Common Name	Parcel Owner	Acres	APN
1.	"PNR"	BARTD	6.62	404-040-040
2.	"C-1"	Hercules Redevelopment Agency	8.69	406-070-043
3.	"Loop"	Hercules Hotel Development Group	6.25	406-070-042
4.	"Ramp"	CalTrans Right-of-Way	3.23	<none>
5.	"CalTrans"	CalTrans Maintenance	6.35	406-070-025
6.	"Carone"	JR & BL Carone	2.04	406-160-002
7.	"WC Drilling"	WC Drilling Inc.	1.77	406-160-006

RBF CONSULTING

No Scale

05/18/07 JN 35-100742

Hercules New Town Center NOP

Project Location Map

EAST BAY
MUNICIPAL UTILITY DISTRICT

June 22, 2007

Steve Lawton, Community Development Director
City of Hercules
111 Civic Drive
Hercules, CA 94547

Re: Notice of Preparation of an Environmental Impact Report – Hercules New Town Center Project

Dear Mr. Lawton:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation of an Environmental Impact Report for the Hercules New Town Center Project in the City of Hercules. EBMUD has the following comments.

WATER SERVICE

Based on the project description in the Notice of Preparation of an Draft Environment Impact Report and pursuant to Section 15083.5 of the California Environmental Quality Act Guidelines, and Section 10910-10915 of the California Water Code, a Water Supply Assessment (WSA) will be required because the project is a mixed-use project would demand an amount of water equivalent to or greater than the amount of water required by a 500 dwelling unit project. A written request to EBMUD to prepare a WSA should be submitted by the lead agency, the City of Hercules. Preparation of the WSA will require that EBMUD contact the project sponsor to gather data and estimates of future water demands for the project area. Please be aware that the WSA can take up to 90 days to complete from the day the request was received.

EBMUD's Maloney Pressure Zone, with a service elevation between 0 and 200 feet, will serve the proposed development. Main extensions, at the project sponsor's expense, will be required to serve the proposed development. Off-site pipeline improvements, also at the project sponsor's expense, may be required to meet domestic demands and fire flow requirements set by the local fire department. Off-site pipeline improvements include, but are not limited to, replacement of existing water mains to the project site. When the development plans are finalized, the project sponsor should contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions

for providing water service to the proposed development. Engineering and installation of water mains and services requires substantial lead-time, which should be provided for in the project sponsor's development schedule.

The project sponsor should be aware that EBMUD will not install piping or services in contaminated soil or groundwater (if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste, or that may be hazardous to the health and safety of construction and maintenance personnel wearing Level D personal protective equipment. EBMUD will not install piping or services in areas where groundwater contaminant concentrations exceed specified limits for discharge to the sanitary sewer system and sewage treatment plants.

The project sponsor must submit copies to EBMUD of all known information regarding soil and groundwater quality within or adjacent to the project boundary and a legally sufficient, complete and specific written remediation plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of contaminated soil and groundwater. EBMUD will not design piping or services until soil and groundwater quality data and remediation plans have been received and reviewed, and will not start underground work until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists, or the information supplied by the project sponsor is insufficient, EBMUD may require the project sponsor to perform sampling and analysis to characterize the soil and groundwater that may be encountered during excavation or EBMUD may perform such sampling and analysis at the project sponsor's expense. If evidence of contamination is discovered during EBMUD work on the project site, work may be suspended until such contamination is adequately characterized and remediated to EBMUD standards.

WATER CONSERVATION

The proposed project presents an opportunity to incorporate water conservation measures. EBMUD would request that the City of Hercules include in its conditions of approval a requirement that the project sponsor comply with Assembly Bill 325, Model Water Efficient Landscape Ordinance (Division 2, Title 23, California Code of Regulations, Chapter 2.7, Sections 490 through 495). EBMUD staff would appreciate the opportunity to meet with the project sponsor to discuss water conservation programs and best management practices. A key objective of this discussion will be to explore timely opportunities to expand water conservation via early consideration of EBMUD's conservation programs and best management practices applicable to the project.

If you have any questions concerning this response, please contact David J. Rehnstrom, Senior Civil Engineer, Water Service Planning at (510) 287-1365

Sincerely,

William R. Kirkpatrick
Manager of Water Distribution Planning

WRK:NJR:sb
sb07_163 doc

Western Contra Costa
Transit Authority

June 22, 2007

Steve Lawton
Community Development Director
City of Hercules
111 Civic Drive
Hercules, CA 94547

Dear Mr. Lawton,

This letter is in response to the request for comments on the scope of work identified in the Environmental Impact Report (EIR) for the Hercules New Town Center project WestCAT staff has reviewed the scope of work and would like to make sure the following specific impacts are considered during the preparation of the EIR:

The development of the New Town Center and the re-location of the current Transit facility will create numerous unknown impacts on congestion throughout the City of Hercules It is important that the study area of the EIR encompass the complete area likely to be affected during this project not only the streets immediate surrounding the project area The impact of the relocation of the Transit Center from its present location to the C-1 parcel will affect the access to the transit facility for cars, pedestrians, bicyclists and transit vehicles. Many people access the current site via these various forms of transportation from locations throughout the area and this major change in functionality of the area will have far reaching consequences within the community, including impacting those not actually accessing the facility The re-location is to a less accessible site and the impact of increased traffic congestion on the adjacent roads is unknown, which could potentially result in an increased travel time for all members of the community.

As part of the study into transportation impacts within the scope of the EIR, WestCAT would like to see transit issues separated from the general transportation issues owing to the substantial impacts this project will have on the transit system WestCAT bus services will have to be re-routed to serve the new site location of the transit center creating new areas of congestion and conflict with other forms of transportation within the community

One critical issue for WestCAT is that the EIR include an assessment of travel time required by individual WestCAT routes to access the relocated facility. The WestCAT route network relies on short headways to achieve an efficient service and to provide

601 Walter Avenue
Pinole, California 94564
Fax 510-724-9551 • 510-724-3331

timed connections to the greater regional transit network. Any increase in travel time may have significant impacts on both ongoing operations cost, and on capital costs associated with adding vehicles added to the fleet to ensure service is maintained at current headways

I would like to take this opportunity to thank you for allowing WestCAT to actively participate in this process and we look forward to working closely with you in the coming months. If you have further questions about this matter, do not hesitate to contact us.

Sincerely,

Robert Thompson
Transit Planner

June 28, 2007

Steve Lawton
City of Hercules
Community Development Department
111 Civic Drive
Hercules, CA 94547

Subject: Notice of Preparation for the Hercules New Town Center EIR

Dear Mr. Lawton:

On behalf of the San Francisco Bay Trail Project, I am writing to submit comments on the Notice of Preparation (NOP) for the Environmental Impact Report (EIR) for the proposed Hercules New Town Center Project (HNTC Project). The Bay Trail Project is a nonprofit organization administered by the Association of Bay Area Governments (ABAG) that plans, promotes, and advocates for the implementation of the Bay Trail. The Bay Trail is a planned 500-mile continuous network of multi-use bicycling and hiking paths that, when complete, will encircle San Francisco and San Pablo Bays in their entirety. It will link the shoreline of all nine Bay Area counties, as well as 47 cities. To date, 290 miles of the proposed Bay Trail system has been developed.

The adopted Bay Trail alignment runs along San Pablo Avenue within the project vicinity and abuts the "PNR" parcel of the proposed project. This alignment of the Bay Trail along San Pablo Avenue runs through the City of Hercules and serves as the commuter alignment of the Bay Trail. From our conversations with City of Hercules staff, it is our understanding that the Bay Trail on San Pablo Avenue has already been completed and exists as Class II bicycle lanes and sidewalks. As such, our primary concerns with the proposed HNTC Project involves the potential impacts of the proposed project on the existing Bay Trail on San Pablo Avenue and the safety of Bay Trail users.

It is paramount that the proposed EIR analyzes the project impacts to the existing Bay Trail along San Pablo Avenue and identifies mitigation that eliminates those potential impacts. One specific issue that the DEIR should focus on analyzing is Bay Trail user safety. The HNTC Project would generate a significant amount of traffic and potentially create more conflicts between motor vehicles and Bay Trail users through additional curb cuts, demand for on-street parking, increased bicycle/pedestrian interaction with motor vehicles at intersections, reduced line-of-site between motorists and bicyclists/pedestrians due to new structures/utilities/landscaping, and a substantial increase in overall motor vehicle trips. All of these safety impacts should be analyzed, discussed, and mitigated in the EIR. In addition, the EIR should analyze and mitigate any physical impacts to the existing Bay Trail and any project impacts that would impede or restrict travel along the Bay Trail by bicyclists and pedestrians.

Please add me to the mailing list for this project and send a copy of the draft EIR and draft project plans for our review when they become available. The Bay Trail Project appreciates the opportunity to comment on this NOP and looks forward to working with you on this project. Please do not hesitate to call me at (510) 464-7915 if you have any questions regarding the above comments or the Bay Trail.

Sincerely,

Lee Chien Huo
Bay Trail Planner

Linda S. Adams
Secretary for
Environmental Protection

Department of Toxic Substances Control

Maureen F. Gorsen, Director
700 Heinz Avenue
Berkeley, California 94710-2721

Arnold Schwarzenegger
Governor

June 28, 2007

Mr. Steve Lawton, Community Development Director
City of Hercules Redevelopment Agency
111 Civic Drive
Hercules, California 94547

Dear Mr. Lawton:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) for the Hercules New Town Center Project Environmental Impact Report (EIR) (Project). The Project site is located at the Interstate 80 and State Route 4 interchange in Hercules, Contra Costa County. As you may be aware, the California Department of Toxic Substances Control (DTSC) oversees the cleanup of sites where hazardous substances have been released pursuant to the California Health and Safety Code, Division 20, Chapter 6.8. As a Responsible Agency, DTSC is submitting comments to ensure that the environmental documentation prepared for this project under the California Environmental Quality Act (CEQA) adequately addresses any remediation activities pertaining to releases of hazardous substances.

The Project site consists of seven parcels totaling approximately 35 acres. According to the NOP, the Project has two goals. The first goal is to amend the Hercules General Plan and Zoning Ordinance to create a "New Town Center" mixed-land used designation and zoning district, which would include residential, commercial, office, public and quasi-public uses. The second goal is to redevelop two of the seven parcels, with one parcel to have a mix of residential, commercial and office uses, and the other to have a new Hercules Transit Center.

DTSC strongly recommends an historical assessment of past land uses for each of the seven parcels to determine whether hazardous substances may have been released to the soil at the site. Based on this information, sampling should be conducted to determine whether there is an issue that will need to be addressed in the CEQA compliance document

If hazardous substances have been released, they will need to be addressed as part of this project. For example, if remediation activities at the Site include the need for soil excavation, the CEQA compliance document should include: (1) an assessment of air impacts and health impacts associated with the excavation activities; (2) identification of any applicable local standards which may be exceeded by the excavation activities,

including dust levels and noise, (3) transportation impacts from the removal or remedial activities; and (4) risk of public upset should be there an accident at the Site.

DTSC and the Regional Water Quality Control Boards (Regional Boards) signed a Memorandum of Agreement, March 1, 2005 (MOA) aimed to avoid duplication of efforts among the agencies in the regulatory oversight of investigation and cleanup activities at brownfield sites. Under the MOA, anyone requesting oversight from DTSC or a Regional Board must submit an application to initiate the process to assign the appropriate oversight agency. The completed application and site information may be submitted to either DTSC or Regional Board office in your geographical area. The application is available at http://www.calepa.ca.gov/brownfields/MOA/application.pdf.

If you have any questions or would like to schedule a meeting, please contact Allan Fone of my staff at (510) 540-3836. Thank you in advance for your cooperation in this matter.

Sincerely,

Ryan Miyamoto for

Denise M. Tsuji, Unit Chief
Northern California - Coastal Cleanup
Operations Branch

cc: Governor's Office of Planning and Research
State Clearinghouse
P. O. Box 3044
Sacramento, CA 95812-3044

Guenther Moskat
CEQA Tracking Center
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

STATE OF CALIFORNIA

Arnold Schwarzenegger, *Governor*

PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO CA 94102-3298

June 29, 2007

Steve Lawton
Hercules Redevelopment Agency
111 Civic Drive
Hercules, CA 94547

RE: Hercules New Town Center, SCH# 2007062002

Dear Mr. Lawton:

As the state agency responsible for rail safety within California, we recommend that any development projects planned adjacent to or near the rail corridor in the City be planned with the safety of the rail corridor in mind. New developments may increase traffic volumes not only on streets and at intersections, but also at at-grade highway-rail crossings. This includes considering pedestrian circulation patterns/destinations with respect to railroad right-of-way (ROW).

Safety factors to consider include, but are not limited to, mprovements to existing at-grade highway-rail crossings due to increase in traffic volumes and appropriate fencing to limit the access of trespassers onto the railroad right-of-way

Of specific concern is that the installation of continuous vandal-resistant fencing should be a requirement of approval for any development project adjacent to the BNSF Railroad ROW to deter trespassing.

The above-mentioned safety improvements should be considered when approval is sought for the new development. Working with Commission staff early in the conceptual design phase will help improve the safety to motorists and pedestrians in the City

If you have any questions in this matter, please call me at (415) 703-2795.

Very truly yours,

Kevin Boles
Environmental Specialist
Rail Crossings Engineering Section
Consumer Protection and Safety Division

cc: John Stilley, BNSF Railroad

Contra Costa County
FLOOD CONTROL
& Water Conservation District

Maurice M. Shiu
ex officio Chief Engineer

255 Glacier Drive Martinez CA 94553-4825
Telephone: (925) 313-2000
FAX (925) 313-2333

July 2, 2007

Steve Lawton
City of Hercules
111 Civic Drive
Hercules, CA 94547

File: 97-112

Dear Mr. Lawton:

We have reviewed the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Hercules New Town Center Project. We received the NOP on June 4, 2006.

The project site is located in the Refugio Creek watershed, on the southeast corner of the intersection of Highway 4 and Interstate 80. The east branch of Refugio Creek passes through the development site. Based on the 1987 Flood Insurance Rate map, some portion of the project and areas west of San Pablo Avenue are in the flood zone. However, we have no information about recent drainage improvement performed by the City in the watershed.

We recommend that the EIR include descriptions of existing drainage problems in the surrounding and downstream areas. The effect of the project to existing drainage problems, to the capacity of Refugio Creek and its tributary watercourses, should be discussed, and mitigation measures for adverse impacts should be presented in the EIR.

We appreciate the opportunity to review projects involving drainage matters and welcome continued coordination. If you have any questions, please call me at (925) 313-2283.

Sincerely,

Mario A. Consolacion
Senior Engineering Technician
Flood Control Engineering

MAC:cw
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\97-112\NOP, Hercules Town Center.doc

c: Greg Connaughton, Flood Control
Bob Faraone, Flood Control
Tim Jensen, Flood Control

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
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July 2, 2007

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SCH 2007062002

Steve Lawton
Community Development Director
City of Hercules
111 Civic Drive
Hercules, CA 94547

Dear Mr. Lawton:

Hercules New Town Center – Notice of Preparation

Thank you for including the California Department of Transportation (Department) in the environmental review for the proposed project. The comments presented below are based on the Notice of Preparation for the Hercules New Town Center Draft Environmental Impact Report (DEIR). As lead agency, the City of Hercules is responsible for all project mitigation, including improvements to state highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures.

Design
The Department is currently performing quality assurance activities on the eastbound State Route 4 (SR 4) Ramp Relocation Project, sponsored by the City. Three alternatives are being considered and would have potential impacts to Parcels 2, 4, and 5 as shown in the NOP's Project Location Map. Under the "Project Objective" section, project coordination with this Ramp Relocation Project should be discussed in full detail. The eastbound SR 4 on ramp should be shown within the State's Right-of-Way (ROW).

Maintenance Services
The Hercules New Town Center Project proposal would impact daily operation of the Department's Hercules maintenance yard. Therefore, the City will need to work closely with the Department to ensure implementation of this project.

Any improvements (i.e. landscaping, drainage, road widening) required on the State's ROW due to this proposed project is the responsibility of the City of Hercules, including subsequent maintenance of these new facilities. A maintenance agreement would be required for the above activities.

Traffic Impact Analysis
The Department is primarily concerned with impacts to the State Highway system. Specifically, a detailed Traffic Impact Analysis (TIA) should identify impacts to SR 4 and I-80 with and without the proposed Hercules New Town Center traffic. The TIA should include, but is not limited to the following:

1. Information on the project's traffic impacts in terms of trip generation, distribution, and assignment. The assumptions and methodologies used in compiling this information should be addressed.

2. Average Daily Traffic (ADT) and AM and PM peak hour volumes on all significantly affected streets and highways, including crossroads and controlling intersections.

3. Schematic illustration of the traffic conditions for: 1) existing, 2) existing plus project, and 3) cumulative for the intersections in the project area.
4. Calculation of cumulative traffic volumes should consider all traffic-generating developments, both existing and future, that would affect the State Highway facilities being evaluated.

5. Mitigation measures should consider highway and non-highway improvements and services. Special attention should be given to the development of alternate solutions to circulation problems that do not rely on increased highway construction.

6. All mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring.

We encourage the City of Hercules to coordinate preparation of the study with our office, and we would appreciate the opportunity to review the scope of work. Please see the Caltrans' "*Guide for the Preparation of Traffic Impact Studies*" at the following website for more information: http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

Encroachment Permit
Any work or traffic control within the State ROW requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information: http://www.dot.ca.gov/hq/traffops/developserv/permits/

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked ATTN: Michael Condie, Office of Permits.

Cultural Resources
Should project plans include construction activities within State ROW for this project, Caltrans requires documented results of a current archaeological record search from the Northwest Information Center (NIC) of the California Historical Resources Information System before an Encroachment Permit can be issued. Current record searches must be no more than five years old. The Department requires the records search, and if warranted, a cultural resource study by a qualified, professional archaeologist, to ensure compliance with NEPA (if there is federal action on the project), CEQA, Section 5024.5 of the California Public Resources Code (for state-owned historic resources) and Volume 2 of the Department's Environmental Handbook (Caltrans Standard Environmental Reference (SER) at http://www.dot.ca.gov/hq/env/index.htm). Work subject to these requirements includes, but is not limited to: lane widening, channelization, auxiliary lanes, and/or modification of existing features such as slopes, drainage features, curbs, sidewalks and driveways within or adjacent to State ROW.

We look forward to reviewing the TIA, including Technical Appendices, and DEIR for this project. Please send two copies to the address at the top of this letterhead, marked ATTN: Christian Bushong, Office of Transit and Community Planning.

Should you require further information or have any questions regarding this letter, please call Christian Bushong of my staff at (510) 286-5606.

Sincerely,

for TIMOTHY C. SABLE
District Branch Chief
IGR/CEQA

c: State Clearinghouse

Appendix B

Air Quality Modeling Data

Parenthetical URBEMIS2007 Assumptions
For: Hercules New Town Center
Date: January 2008

LAND USES

Amount	Land Use Type	Unit Type	Trip Rate
Project Level - Market Town/PNR Parcel			
400	Multi-Family Residential	Dwelling Units	5.75
60	Retail	Thousand Square Feet	44.3
80	Office	Thousand Square Feet	14.0
Program Level - New Town Center			
1,250	Multi-Family Residential	Dwelling Units	5.75
260	Retail	Thousand Square Feet	44.3
116.250	Office	Thousand Square Feet	14.0

YEAR 2035 AREA SOURCES

Natural Gas Fuel Combustion:

(URBEMIS2007 default all phases)

Hearth Fuel Combustion:

Off

Landscape Fuel Combustion:

Year of Completion	Summer Days
Project Completion - 2013	180
Program Buildout - 2035	180

Consumer Products:

(URBEMIS2007 default all phases)

Architectural Coating:

(URBEMIS2007 default all phases)

Area Source Mitigation:

Low VOC coatings (pursuant to BAAQMD Regulation 8 [Organic Compounds], Rule 3 Architectural Coatings])
Refer to URBEMIS2007 file output.

YEAR 2035 OPERATIONAL SOURCES

Vehicle Fleet %:

(URBEMIS2007 default all phases)

Year:

Year of Completion – 2013 (Project)
Year of Completion – 2035 (Program)

Trip Characteristics:

(URBEMIS2007 Default all phases)

Temperature Data:

40 to 90 degrees Fahrenheit

Variable Starts:

(URBEMIS2007 default all phases)

Road Dust:

Paved – 100%
Unpaved – 0%

Pass By Trips (On/Off):

On

Double-Counting(On/Off):

Off

Operational Mitigation Measures:

Refer to URBEMIS2007 file output.

1/30/2008 5:19:28 PM

Urbemis 2007 Version 9.2.2

Combined Summer Emissions Reports (Pounds/Day)

File Name: I:\pdata\00000100\10P\WPWIN\EddieT\Programs\Air\URBEMIS\URBEMIS2007\HerculesNTC-PNR.urb9

Project Name: Hercules NTC

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	23.78	4.19	7.03	0.00	0.02	0.02	5,195.28

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	36.04	41.36	431.08	0.47	83.11	15.83	46,915.36
TOTALS (lbs/day, mitigated)	36.04	41.36	431.08	0.47	83.11	15.83	46,915.36
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	59.82	45.55	438.11	0.47	83.13	15.85	52,110.64

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

1/30/2008 5:19:28 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.31	4.13	2.22	0.00	0.01	0.01	5,187.04
Hearth							
Landscape	0.39	0.06	4.81	0.00	0.01	0.01	8.24
Consumer Products	19.57						
Architectural Coatings	3.51						
TOTALS (lbs/day, unmitigated)	23.78	4.19	7.03	0.00	0.02	0.02	5,195.28

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	16.43	16.75	179.05	0.19	33.78	6.44	19,160.65
Strip mall	13.05	16.86	170.88	0.19	33.74	6.42	18,950.16
General office building	6.56	7.75	81.15	0.09	15.59	2.97	8,804.55
TOTALS (lbs/day, unmitigated)	36.04	41.36	431.08	0.47	83.11	15.83	46,915.36

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Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	16.43	16.75	179.05	0.19	33.78	6.44	19,160.65
Strip mall	13.05	16.86	170.88	0.19	33.74	6.42	18,950.16
General office building	6.56	7.75	81.15	0.09	15.59	2.97	8,804.55
TOTALS (lbs/day, mitigated)	36.04	41.36	431.08	0.47	83.11	15.83	46,915.36

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments mid rise	6.62	5.75	dwelling units	400.00	2,300.00	19,664.31
Strip mall		44.30	1000 sq ft	60.00	2,658.00	19,650.59
General office building		14.00	1000 sq ft	80.00	1,120.00	9,074.80
					6,078.00	48,389.70

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
General office building				35.0	17.5	47.5

1/30/2008 5:20:01 PM

Urbemis 2007 Version 9.2.2

Combined Winter Emissions Reports (Pounds/Day)

File Name: I:\pdata\00000100\10P\WPWIN\EddieT\Programs\Air\URBEMIS\URBEMIS2007\HerculesNTC-PNR.urb9

Project Name: Hercules NTC

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	23.39	4.13	2.22	0.00	0.01	0.01	5,187.04

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	38.90	61.63	458.66	0.40	83.11	15.83	40,514.79
TOTALS (lbs/day, mitigated)	38.90	61.63	458.66	0.40	83.11	15.83	40,514.79
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	62.29	65.76	460.88	0.40	83.12	15.84	45,701.83

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

1/30/2008 5:20:01 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.31	4.13	2.22	0.00	0.01	0.01	5,187.04
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	19.57						
Architectural Coatings	3.51						
TOTALS (lbs/day, unmitigated)	23.39	4.13	2.22	0.00	0.01	0.01	5,187.04

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	15.80	25.00	188.20	0.16	33.78	6.44	16,559.63
Strip mall	15.87	25.08	184.79	0.16	33.74	6.42	16,350.95
General office building	7.23	11.55	85.67	0.08	15.59	2.97	7,604.21
TOTALS (lbs/day, unmitigated)	38.90	61.63	458.66	0.40	83.11	15.83	40,514.79

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Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	15.80	25.00	188.20	0.16	33.78	6.44	16,559.63
Strip mall	15.87	25.08	184.79	0.16	33.74	6.42	16,350.95
General office building	7.23	11.55	85.67	0.08	15.59	2.97	7,604.21
TOTALS (lbs/day, mitigated)	38.90	61.63	458.66	0.40	83.11	15.83	40,514.79

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments mid rise	6.62	5.75	dwelling units	400.00	2,300.00	19,664.31
Strip mall		44.30	1000 sq ft	60.00	2,658.00	19,650.59
General office building		14.00	1000 sq ft	80.00	1,120.00	9,074.80
					6,078.00	48,389.70

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
General office building				35.0	17.5	47.5

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Urbemis 2007 Version 9.2.2

Combined Annual Emissions Reports (Tons/Year)

File Name: I:\pdata\00000100\10P\WPWIN\EddieT\Programs\Air\URBEMIS\URBEMIS2007\HerculesNTC-PNR.urb9

Project Name: Hercules NTC

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	4.31	0.76	0.83	0.00	0.00	0.00	947.37

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	6.75	8.79	80.35	0.08	15.16	2.88	8,172.69
TOTALS (tons/year, mitigated)	6.75	8.79	80.35	0.08	15.16	2.88	8,172.69
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	11.06	9.55	81.18	0.08	15.16	2.88	9,120.06

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

1/30/2008 5:20:13 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.06	0.75	0.40	0.00	0.00	0.00	946.63
Hearth							
Landscape	0.04	0.01	0.43	0.00	0.00	0.00	0.74
Consumer Products	3.57						
Architectural Coatings	0.64						
TOTALS (tons/year, unmitigated)	4.31	0.76	0.83	0.00	0.00	0.00	947.37

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	2.96	3.56	33.23	0.03	6.16	1.17	3,338.59
Strip mall	2.55	3.58	32.03	0.03	6.16	1.17	3,300.29
General office building	1.24	1.65	15.09	0.02	2.84	0.54	1,533.81
TOTALS (tons/year, unmitigated)	6.75	8.79	80.35	0.08	15.16	2.88	8,172.69

1/30/2008 5:20:13 PM

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	2.96	3.56	33.23	0.03	6.16	1.17	3,338.59
Strip mall	2.55	3.58	32.03	0.03	6.16	1.17	3,300.29
General office building	1.24	1.65	15.09	0.02	2.84	0.54	1,533.81
TOTALS (tons/year, mitigated)	6.75	8.79	80.35	0.08	15.16	2.88	8,172.69

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments mid rise	6.62	5.75	dwelling units	400.00	2,300.00	19,664.31
Strip mall		44.30	1000 sq ft	60.00	2,658.00	19,650.59
General office building		14.00	1000 sq ft	80.00	1,120.00	9,074.80
					6,078.00	48,389.70

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.7	0.6	99.2	0.2
Light Truck < 3750 lbs	12.8	0.8	96.9	2.3

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck 3751-5750 lbs	19.9	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.6	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	56.2	43.8	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

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Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
General office building				35.0	17.5	47.5

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Urbemis 2007 Version 9.2.2

Combined Summer Emissions Reports (Pounds/Day)

File Name: I:\pdata\00000100\10P\WPWIN\EddieT\Programs\Air\URBEMIS\URBEMIS2007\HerculesNTC-entire program.urb9

Project Name: Hercules NTC

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	96.49	16.91	13.80	0.00	0.04	0.04	21,175.78

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	62.39	48.12	664.26	1.96	351.05	66.18	198,000.62
TOTALS (lbs/day, mitigated)	62.39	48.12	664.26	1.96	351.05	66.18	198,000.62
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	158.88	65.03	678.06	1.96	351.09	66.22	219,176.40

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

1/30/2008 5:17:37 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	1.28	16.85	8.99	0.00	0.03	0.03	21,167.54
Hearth							
Landscape	0.39	0.06	4.81	0.00	0.01	0.01	8.24
Consumer Products	80.72						
Architectural Coatings	14.10						
TOTALS (lbs/day, unmitigated)	96.49	16.91	13.80	0.00	0.04	0.04	21,175.78

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	27.45	18.96	268.31	0.78	138.97	26.23	78,797.57
Strip mall	28.29	23.94	323.42	0.97	173.95	32.76	97,669.52
General office building	6.65	5.22	72.53	0.21	38.13	7.19	21,533.53
TOTALS (lbs/day, unmitigated)	62.39	48.12	664.26	1.96	351.05	66.18	198,000.62

1/30/2008 5:17:37 PM

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	27.45	18.96	268.31	0.78	138.97	26.23	78,797.57
Strip mall	28.29	23.94	323.42	0.97	173.95	32.76	97,669.52
General office building	6.65	5.22	72.53	0.21	38.13	7.19	21,533.53
TOTALS (lbs/day, mitigated)	62.39	48.12	664.26	1.96	351.05	66.18	198,000.62

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2035 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments mid rise	34.95	5.75	dwelling units	1,650.00	9,487.50	81,115.28
Strip mall		42.94	1000 sq ft	320.00	13,740.80	101,585.73
General office building		14.00	1000 sq ft	196.25	2,747.50	22,261.62
					25,975.80	204,962.63

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.0	0.0	100.0	0.0
Light Truck < 3750 lbs	12.5	0.0	100.0	0.0

1/30/2008 5:17:37 PM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck 3751-5750 lbs	19.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	6.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	34.4	65.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

1/30/2008 5:17:37 PM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
General office building				35.0	17.5	47.5

1/30/2008 5:18:14 PM

Urbemis 2007 Version 9.2.2

Combined Winter Emissions Reports (Pounds/Day)

File Name: I:\pdata\00000100\10P\WPWIN\EddieT\Programs\Air\URBEMIS\URBEMIS2007\HerculesNTC-entire program.urb9

Project Name: Hercules NTC

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	96.10	16.85	8.99	0.00	0.03	0.03	21,167.54

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	66.59	71.94	690.93	1.68	351.05	66.18	169,994.19
TOTALS (lbs/day, mitigated)	66.59	71.94	690.93	1.68	351.05	66.18	169,994.19
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	162.69	88.79	699.92	1.68	351.08	66.21	191,161.73

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

1/30/2008 5:18:14 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	1.28	16.85	8.99	0.00	0.03	0.03	21,167.54
Hearth							
Landscaping - No Winter Emissions							
Consumer Products	80.72						
Architectural Coatings	14.10						
TOTALS (lbs/day, unmitigated)	96.10	16.85	8.99	0.00	0.03	0.03	21,167.54

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	26.36	28.38	276.31	0.67	138.97	26.23	67,713.85
Strip mall	33.05	35.75	339.74	0.83	173.95	32.76	83,788.68
General office building	7.18	7.81	74.88	0.18	38.13	7.19	18,491.66
TOTALS (lbs/day, unmitigated)	66.59	71.94	690.93	1.68	351.05	66.18	169,994.19

1/30/2008 5:18:14 PM

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	26.36	28.38	276.31	0.67	138.97	26.23	67,713.85
Strip mall	33.05	35.75	339.74	0.83	173.95	32.76	83,788.68
General office building	7.18	7.81	74.88	0.18	38.13	7.19	18,491.66
TOTALS (lbs/day, mitigated)	66.59	71.94	690.93	1.68	351.05	66.18	169,994.19

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2035 Temperature (F): 40 Season: Winter

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments mid rise	34.95	5.75	dwelling units	1,650.00	9,487.50	81,115.28
Strip mall		42.94	1000 sq ft	320.00	13,740.80	101,585.73
General office building		14.00	1000 sq ft	196.25	2,747.50	22,261.62
					25,975.80	204,962.63

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.0	0.0	100.0	0.0
Light Truck < 3750 lbs	12.5	0.0	100.0	0.0

1/30/2008 5:18:14 PM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck 3751-5750 lbs	19.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	6.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	34.4	65.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

1/30/2008 5:18:14 PM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
General office building				35.0	17.5	47.5

1/30/2008 5:18:21 PM

Urbemis 2007 Version 9.2.2

Combined Annual Emissions Reports (Tons/Year)

File Name: I:\pdata\00000100\10P\WPWIN\EddieT\Programs\Air\URBEMIS\URBEMIS2007\HerculesNTC-entire program.urb9

Project Name: Hercules NTC

Project Location: Bay Area Air District

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	17.57	3.08	2.07	0.00	0.01	0.01	3,863.82

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	11.64	10.23	122.85	0.35	64.07	12.08	34,431.39
TOTALS (tons/year, mitigated)	11.64	10.23	122.85	0.35	64.07	12.08	34,431.39
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (tons/year, unmitigated)	29.21	13.31	124.92	0.35	64.08	12.09	38,295.21

Both Area and Operational Mitigation must be turned on to get a combined mitigated total.

1/30/2008 5:18:21 PM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.23	3.07	1.64	0.00	0.01	0.01	3,863.08
Hearth							
Landscape	0.04	0.01	0.43	0.00	0.00	0.00	0.74
Consumer Products	14.73						
Architectural Coatings	2.57						
TOTALS (tons/year, unmitigated)	17.57	3.08	2.07	0.00	0.01	0.01	3,863.82

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	4.94	4.03	49.45	0.14	25.36	4.79	13,706.30
Strip mall	5.45	5.09	60.02	0.17	31.75	5.98	16,980.27
General office building	1.25	1.11	13.38	0.04	6.96	1.31	3,744.82
TOTALS (tons/year, unmitigated)	11.64	10.23	122.85	0.35	64.07	12.08	34,431.39

1/30/2008 5:18:21 PM

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments mid rise	4.94	4.03	49.45	0.14	25.36	4.79	13,706.30
Strip mall	5.45	5.09	60.02	0.17	31.75	5.98	16,980.27
General office building	1.25	1.11	13.38	0.04	6.96	1.31	3,744.82
TOTALS (tons/year, mitigated)	11.64	10.23	122.85	0.35	64.07	12.08	34,431.39

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2035 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments mid rise	34.95	5.75	dwelling units	1,650.00	9,487.50	81,115.28
Strip mall		42.94	1000 sq ft	320.00	13,740.80	101,585.73
General office building		14.00	1000 sq ft	196.25	2,747.50	22,261.62
					25,975.80	204,962.63

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.0	0.0	100.0	0.0
Light Truck < 3750 lbs	12.5	0.0	100.0	0.0

1/30/2008 5:18:21 PM

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Truck 3751-5750 lbs	19.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	6.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.0	0.0	20.0	80.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.3	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	3.2	34.4	65.6	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

1/30/2008 5:18:21 PM

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
General office building				35.0	17.5	47.5

```
1                    CALINE4 - (DATED CALINE4x)

             3.0.0 PC (32 BIT) VERSION
            (C) COPYRIGHT 2000, TRINITY CONSULTANTS

 Run Began on  1/30/2008 at  8:43:00


           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: 01 Willow and Sycamore
               RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


    I.  SITE VARIABLES

           U=   0.5 M/S              Z0= 100. CM            ALT=     0. (M)
         BRG= WORST CASE             VD=  0.0 CM/S
        CLAS=     7 (G)              VS=  0.0 CM/S
        MIXH= 1000. M               AMB=  2.5 PPM
       SIGTH=   20. DEGREES        TEMP= 15.0 DEGREE (C)


   II.  LINK VARIABLES

        LINK      *  LINK COORDINATES (M)   *              EF     H     W
    DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
  1. Y SB1        *   684  1256   711  1201 *  AG   1450   0.8    0.0  36.6
  2. Y SB2        *   711  1201   745  1133 *  AG   1180   1.4    0.0  36.6
  3. Y SB3        *   745  1133   800  1025 *  AG   1590   0.8    0.0  36.6
  4. Y SB4        *   800  1025   858   906 *  AG   1590   0.8    0.0  36.6
  5. Y NB1        *   868   911   813  1024 *  AG   1530   0.8    0.0  36.6
  6. Y NB2        *   814  1024   761  1138 *  AG   1450   1.4    0.0  36.6
  7. Y NB3        *   761  1138   728  1205 *  AG   1490   0.8    0.0  36.6
  8. Y NB4        *   728  1205   700  1263 *  AG   1490   0.8    0.0  36.6
  9. Y LT1        *   720  1198   753  1134 *  AG    270   1.4    0.0  36.6
 10. Y LT2        *   753  1134   802  1038 *  AG     80   1.4    0.0  36.6
 11. X EB1        *   596  1103   682  1125 *  AG    250   0.8    0.0  18.3
 12. X EB2        *   682  1125   750  1141 *  AG    210   1.4    0.0  18.3
 13. X EB3        *   750  1141   826  1158 *  AG    480   0.8    0.0  18.3
 14. X EB4        *   826  1158   923  1182 *  AG    480   0.8    0.0  18.3
 15. X WB1        *   924  1170   832  1147 *  AG   1410   0.8    0.0  18.3
 16. X WB2        *   832  1147   757  1128 *  AG   1000   1.4    0.0  18.3
 17. X WB3        *   757  1128   687  1111 *  AG   1080   0.8    0.0  18.3
 18. X WB4        *   687  1111   599  1090 *  AG   1080   0.8    0.0  18.3
 19. X LT1        *   674  1115   753  1134 *  AG     40   1.4    0.0  18.3
 20. X LT2        *   753  1134   841  1157 *  AG    410   1.4    0.0  18.3


  III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
  RECEPTOR   *    X      Y      Z
 ------------*--------------------
  1. Recpt 1  *    805   1099   1.8
  2. Recpt 2  *    691   1157   1.8
  3. Recpt 3  *    729   1093   1.8
  4. Recpt 4  *    778   1179   1.8
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	310.	2.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	104.	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	51.	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	177.	2.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 1/30/2008 at 8:43:00

```
1                    CALINE4 - (DATED CALINE4x)

             3.0.0 PC (32 BIT) VERSION
            (C) COPYRIGHT 2000, TRINITY CONSULTANTS

 Run Began on  1/30/2008 at  8:47:55


           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: 02 Sycamore and San Pablo
               RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


    I.  SITE VARIABLES

           U=   0.5 M/S              Z0= 100. CM            ALT=     0. (M)
         BRG= WORST CASE             VD=  0.0 CM/S
        CLAS=     7 (G)              VS=  0.0 CM/S
        MIXH= 1000. M               AMB=  2.5 PPM
       SIGTH=   20. DEGREES        TEMP= 15.0 DEGREE (C)


   II.  LINK VARIABLES

        LINK      *  LINK COORDINATES (M)   *              EF     H     W
    DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
  1. Y SB1        *   684  1256   711  1201 *  AG   1740   0.8    0.0  36.6
  2. Y SB2        *   711  1201   745  1133 *  AG   1040   1.4    0.0  36.6
  3. Y SB3        *   745  1133   800  1025 *  AG   1880   0.8    0.0  36.6
  4. Y SB4        *   800  1025   858   906 *  AG   1880   0.8    0.0  36.6
  5. Y NB1        *   868   911   813  1024 *  AG   1780   0.8    0.0  36.6
  6. Y NB2        *   814  1024   761  1138 *  AG   1740   1.4    0.0  36.6
  7. Y NB3        *   761  1138   728  1205 *  AG   1940   0.8    0.0  36.6
  8. Y NB4        *   728  1205   700  1263 *  AG   1940   0.8    0.0  36.6
  9. Y LT1        *   720  1198   753  1134 *  AG    700   1.4    0.0  36.6
 10. Y LT2        *   753  1134   802  1038 *  AG     40   1.4    0.0  36.6
 11. X EB1        *   596  1103   682  1125 *  AG    380   0.8    0.0  36.6
 12. X EB2        *   682  1125   750  1141 *  AG    180   1.4    0.0  36.6
 13. X EB3        *   750  1141   826  1158 *  AG    880   0.8    0.0  36.6
 14. X EB4        *   826  1158   923  1182 *  AG    880   0.8    0.0  36.6
 15. X WB1        *   924  1170   832  1147 *  AG   2180   0.8    0.0  36.6
 16. X WB2        *   832  1147   757  1128 *  AG   1340   1.4    0.0  36.6
 17. X WB3        *   757  1128   687  1111 *  AG   1380   0.8    0.0  36.6
 18. X WB4        *   687  1111   599  1090 *  AG   1380   0.8    0.0  36.6
 19. X LT1        *   674  1115   753  1134 *  AG    200   1.4    0.0  36.6
 20. X LT2        *   753  1134   841  1157 *  AG    840   1.4    0.0  36.6


  III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
 ------------*--------------------
  1. Recpt 1  *    805   1099   1.8
  2. Recpt 2  *    691   1157   1.8
  3. Recpt 3  *    729   1093   1.8
  4. Recpt 4  *    778   1179   1.8
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	312.	2.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	100.	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	53.	2.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
4. Recpt 4	178.	2.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 1/30/2008 at 8:47:55

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1                    CALINE4 - (DATED CALINE4x)

             3.0.0 PC (32 BIT) VERSION
            (C) COPYRIGHT 2000, TRINITY CONSULTANTS

 Run Began on  1/30/2008 at  8:51:28


           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: 03 San Pablo and John Muir
               RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


    I.  SITE VARIABLES

           U=   0.5 M/S              Z0= 100. CM            ALT=     0. (M)
         BRG= WORST CASE             VD=  0.0 CM/S
        CLAS=     7 (G)              VS=  0.0 CM/S
        MIXH= 1000. M               AMB=  2.5 PPM
       SIGTH=   20. DEGREES        TEMP= 15.0 DEGREE (C)


   II.  LINK VARIABLES

        LINK      *  LINK COORDINATES (M)   *              EF     H     W
    DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
  1. Y SB1        *   684  1256   711  1201 *  AG    780   0.8    0.0  30.5
  2. Y SB2        *   711  1201   745  1133 *  AG    510   1.4    0.0  30.5
  3. Y SB3        *   745  1133   800  1025 *  AG   1590   0.8    0.0  30.5
  4. Y SB4        *   800  1025   858   906 *  AG   1590   0.8    0.0  30.5
  5. Y NB1        *   868   911   813  1024 *  AG   2420   0.8    0.0  30.5
  6. Y NB2        *   814  1024   761  1138 *  AG   2290   1.4    0.0  30.5
  7. Y NB3        *   761  1138   728  1205 *  AG   2360   0.8    0.0  30.5
  8. Y NB4        *   728  1205   700  1263 *  AG   2360   0.8    0.0  30.5
  9. Y LT1        *   720  1198   753  1134 *  AG    270   1.4    0.0  30.5
 10. Y LT2        *   753  1134   802  1038 *  AG    130   1.4    0.0  30.5
 11. X EB1        *   596  1103   682  1125 *  AG   1310   0.8    0.0  36.6
 12. X EB2        *   682  1125   750  1141 *  AG   1240   1.4    0.0  36.6
 13. X EB3        *   750  1141   826  1158 *  AG   1510   0.8    0.0  36.6
 14. X EB4        *   826  1158   923  1182 *  AG   1510   0.8    0.0  36.6
 15. X WB1        *   924  1170   832  1147 *  AG   1200   0.8    0.0  36.6
 16. X WB2        *   832  1147   757  1128 *  AG    120   1.4    0.0  36.6
 17. X WB3        *   757  1128   687  1111 *  AG    250   0.8    0.0  36.6
 18. X WB4        *   687  1111   599  1090 *  AG    250   0.8    0.0  36.6
 19. X LT1        *   674  1115   753  1134 *  AG     70   1.4    0.0  36.6
 20. X LT2        *   753  1134   841  1157 *  AG   1080   1.4    0.0  36.6


  III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
 ------------*--------------------
  1. Recpt 1  *    805   1099   1.8
  2. Recpt 2  *    691   1157   1.8
  3. Recpt 3  *    729   1093   1.8
  4. Recpt 4  *    778   1179   1.8
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	306.	2.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	126.	2.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3. Recpt 3	53.	2.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
4. Recpt 4	178.	2.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 1/30/2008 at 8:51:28

```
1                    CALINE4 - (DATED CALINE4x)

             3.0.0 PC (32 BIT) VERSION
            (C) COPYRIGHT 2000, TRINITY CONSULTANTS

 Run Began on  1/30/2008 at  8:57:11


           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: 04 Willow and Palm
               RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


    I.  SITE VARIABLES

           U=   0.5 M/S             Z0= 100. CM            ALT=     0. (M)
         BRG= WORST CASE            VD=  0.0 CM/S
        CLAS=     7 (G)             VS=  0.0 CM/S
        MIXH= 1000. M              AMB=  2.5 PPM
       SIGTH=   20. DEGREES       TEMP= 15.0 DEGREE (C)


   II.  LINK VARIABLES

        LINK      *  LINK COORDINATES (M)   *              EF     H     W
    DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*------------------------------
  1. Y SB1        *   684  1256   711  1201 *  AG      0   0.8    0.0  18.3
  2. Y SB2        *   711  1201   745  1133 *  AG      0   1.4    0.0  18.3
  3. Y SB3        *   745  1133   800  1025 *  AG    880   0.8    0.0  18.3
  4. Y SB4        *   800  1025   858   906 *  AG    880   0.8    0.0  18.3
  5. Y NB1        *   868   911   813  1024 *  AG    280   0.8    0.0  18.3
  6. Y NB2        *   814  1024   761  1138 *  AG    250   1.4    0.0  18.3
  7. Y NB3        *   761  1138   728  1205 *  AG    250   0.8    0.0  18.3
  8. Y NB4        *   728  1205   700  1263 *  AG    250   0.8    0.0  18.3
  9. Y LT1        *   720  1198   753  1134 *  AG      0   1.4    0.0  18.3
 10. Y LT2        *   753  1134   802  1038 *  AG     30   1.4    0.0  18.3
 11. X EB1        *   596  1103   682  1125 *  AG    520   0.8    0.0  19.8
 12. X EB2        *   682  1125   750  1141 *  AG    520   1.4    0.0  19.8
 13. X EB3        *   750  1141   826  1158 *  AG    520   0.8    0.0  19.8
 14. X EB4        *   826  1158   923  1182 *  AG    520   0.8    0.0  19.8
 15. X WB1        *   924  1170   832  1147 *  AG   2040   0.8    0.0  19.8
 16. X WB2        *   832  1147   757  1128 *  AG   1160   1.4    0.0  19.8
 17. X WB3        *   757  1128   687  1111 *  AG   1190   0.8    0.0  19.8
 18. X WB4        *   687  1111   599  1090 *  AG   1190   0.8    0.0  19.8
 19. X LT1        *   674  1115   753  1134 *  AG      0   1.4    0.0  19.8
 20. X LT2        *   753  1134   841  1157 *  AG    880   1.4    0.0  19.8


  III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
 ------------*--------------------
  1. Recpt 1  *    805   1099   1.8
  2. Recpt 2  *    691   1157   1.8
  3. Recpt 3  *    729   1093   1.8
  4. Recpt 4  *    778   1179   1.8
```

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	313.	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	103.	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	51.	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	177.	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 1/30/2008 at 8:57:11

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 1/30/2008 at 9:32:07

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 08 Palm and Sycamore
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 0.5 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 2.5 PPM
SIGTH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1. Link A	6284	-181	6284	-246	AG	60	0.8	0.0	22.9
2. Link B	6284	-246	6284	-300	AG	10	1.4	0.0	22.9
3. Link C	6284	-300	6279	-453	AG	280	0.8	0.0	22.9
4. Link D	6297	-460	6298	-378	AG	990	0.8	0.0	22.9
5. Link E	6298	-378	6298	-319	AG	990	0.8	0.0	22.9
6. Link F	6298	-319	6297	-176	AG	990	0.8	0.0	22.9
7. Link G	6284	-265	6300	-314	AG	50	1.4	0.0	22.9
8. Link H	6300	-314	6462	-325	AG	50	0.8	0.0	15.2
9. Link I	6523	-313	6380	-311	AG	510	0.8	0.0	15.2
10. Link J	6380	-311	6298	-301	AG	240	1.4	0.0	15.2
11. Link K	6370	-310	6284	-326	AG	270	1.4	0.0	15.2

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	6325	-280	1.7
2. Recpt 2	6315	-339	1.7
3. Recpt 3	6243	-327	1.7
4. Recpt 4	6246	-277	1.7

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	197.	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

```
  2. Recpt 2  *  347. *   2.6 *  0.0  0.0  0.0  0.0  0.0  0.1  0.0  0.0
  3. Recpt 3  *   84. *   2.6 *  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
  4. Recpt 4  *  107. *   2.6 *  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0


             *CONC/LINK
             *(PPM)
  RECEPTOR   *   9   10   11
 ------------*-------------------------------------------------
  1. Recpt 1  *  0.0  0.0  0.0
  2. Recpt 2  *  0.0  0.0  0.0
  3. Recpt 3  *  0.0  0.0  0.0
  4. Recpt 4  *  0.0  0.0  0.0


1

 Run Ended on  1/30/2008 at  9:32:07
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1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 1/30/2008 at 9:30:37

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 08 Palm and Sycamore
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 0.5 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 2.5 PPM
SIGTH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1. Link A	6284	-181	6284	-246	AG	1730	0.8	0.0	36.6
2. Link B	6284	-246	6284	-300	AG	1670	1.4	0.0	36.6
3. Link C	6284	-300	6279	-453	AG	1740	0.8	0.0	36.6
4. Link D	6297	-460	6298	-378	AG	2370	0.8	0.0	36.6
5. Link E	6298	-378	6298	-319	AG	2370	0.8	0.0	36.6
6. Link F	6298	-319	6297	-176	AG	2370	0.8	0.0	36.6
7. Link G	6284	-265	6300	-314	AG	60	1.4	0.0	36.6
8. Link H	6300	-314	6462	-325	AG	60	0.8	0.0	24.4
9. Link I	6523	-313	6380	-311	AG	180	0.8	0.0	24.4
10. Link J	6380	-311	6298	-301	AG	110	1.4	0.0	24.4
11. Link K	6370	-310	6284	-326	AG	70	1.4	0.0	24.4

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	6325	-280	1.7
2. Recpt 2	6315	-339	1.7
3. Recpt 3	6243	-327	1.7
4. Recpt 4	6246	-277	1.7

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	200.	2.7	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0

```
  2. Recpt 2  *  346. *   2.7 *  0.0  0.0  0.0  0.0  0.0  0.1  0.0  0.0
  3. Recpt 3  *   33. *   2.6 *  0.0  0.1  0.0  0.0  0.0  0.0  0.0  0.0
  4. Recpt 4  *  106. *   2.6 *  0.0  0.1  0.0  0.0  0.0  0.0  0.0  0.0


             *CONC/LINK
             *(PPM)
  RECEPTOR   *   9   10   11
 ------------*-------------------------------------------------
  1. Recpt 1  *  0.0  0.0  0.0
  2. Recpt 2  *  0.0  0.0  0.0
  3. Recpt 3  *  0.0  0.0  0.0
  4. Recpt 4  *  0.0  0.0  0.0


1

 Run Ended on  1/30/2008 at  9:30:37
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1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 1/30/2008 at 9:35:42

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: 13 TC east driveway and Willow
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 0.5 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= 0.0 CM/S
CLAS= 7 (G) VS= 0.0 CM/S
MIXH= 1000. M AMB= 2.5 PPM
SIGTH= 5. DEGREES TEMP= 4.4 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1. Link A	6284	-181	6284	-246	AG	440	0.8	0.0	21.3
2. Link B	6284	-246	6284	-300	AG	310	1.4	0.0	21.3
3. Link C	6284	-300	6279	-453	AG	520	0.8	0.0	21.3
4. Link D	6297	-460	6298	-378	AG	1050	0.8	0.0	21.3
5. Link E	6298	-378	6298	-319	AG	1050	0.8	0.0	21.3
6. Link F	6298	-319	6297	-176	AG	1050	0.8	0.0	21.3
7. Link G	6284	-265	6300	-314	AG	130	1.4	0.0	21.3
8. Link H	6300	-314	6462	-325	AG	130	0.8	0.0	15.2
9. Link I	6523	-313	6380	-311	AG	250	0.8	0.0	15.2
10. Link J	6380	-311	6298	-301	AG	40	1.4	0.0	15.2
11. Link K	6370	-310	6284	-326	AG	210	1.4	0.0	15.2

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	6325	-280	1.7
2. Recpt 2	6315	-339	1.7
3. Recpt 3	6243	-327	1.7
4. Recpt 4	6246	-277	1.7

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	199.	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

```
  2. Recpt 2  *  343. *   2.6 *  0.0  0.0  0.0  0.0  0.0  0.1  0.0  0.0
  3. Recpt 3  *   85. *   2.6 *  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0
  4. Recpt 4  *  108. *   2.6 *  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0


            *CONC/LINK
            *(PPM)
  RECEPTOR   *   9   10   11
 ------------*-------------------------------------------------
  1. Recpt 1  *  0.0  0.0  0.0
  2. Recpt 2  *  0.0  0.0  0.0
  3. Recpt 3  *  0.0  0.0  0.0
  4. Recpt 4  *  0.0  0.0  0.0


1

 Run Ended on  1/30/2008 at  9:35:43
```

Title : San Francisco Air Basin Avg Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/01/30 08:36:02
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Francisco
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.038	0.069	0.103	1.106	1.402	4.805	0.138
35	0.006	0.010	0.017	0.143	0.326	1.874	0.030

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.817	1.340	1.828	4.711	7.741	23.749	1.443
35	0.488	0.795	1.001	0.997	1.290	15.408	0.782

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.076	0.136	0.258	4.055	19.285	1.456	0.340
35	0.043	0.077	0.156	1.663	8.445	1.328	0.165

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	943.497	1190.091	1683.567	2617.298	2427.312	266.395	1154.107
35	306.921	387.261	522.164	1483.709	1927.691	139.995	401.170

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.025	0.023	0.003	0.011
35	0.003	0.004	0.005	0.014	0.018	0.002	0.004

Pollutant Name: PM2.5 Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.048	0.102	0.118	0.178	0.458	0.023	0.079
35	0.008	0.017	0.020	0.072	0.111	0.011	0.015

Pollutant Name: PM2.5 - Tire Wear Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.005	0.002	0.001	0.002
35	0.002	0.002	0.002	0.005	0.002	0.001	0.002

Pollutant Name: PM2.5 - Break Wear Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.005	0.005	0.008	0.005	0.003	0.005
35	0.005	0.005	0.005	0.008	0.005	0.003	0.005

Pollutant Name: Gasoline - mi/gal Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.377	7.428	5.167	3.515	3.501	27.765	8.447
35	28.797	22.804	16.916	17.761	17.696	52.000	25.789

Pollutant Name: Diesel - mi/gal Temperature: 60F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.453	4.728	4.202	0.000	6.729
35	29.156	29.156	19.453	6.126	4.202	0.000	7.843

Title : San Francisco Air Basin Avg Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/01/30 08:36:02
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Francisco
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.004	0.008	0.030	0.054	0.102	0.851	0.020
10	0.009	0.017	0.060	0.105	0.200	1.042	0.033
20	0.017	0.033	0.118	0.199	0.379	1.409	0.058
30	0.025	0.048	0.174	0.282	0.537	1.758	0.082
40	0.032	0.063	0.227	0.354	0.674	2.087	0.104
50	0.039	0.077	0.279	0.415	0.791	2.397	0.125
60	0.046	0.090	0.328	0.466	0.887	2.621	0.144
120	0.076	0.150	0.560	0.444	0.845	2.705	0.205
180	0.058	0.114	0.468	0.471	0.897	2.446	0.173
240	0.061	0.122	0.498	0.497	0.947	2.601	0.184
300	0.065	0.129	0.528	0.523	0.995	2.753	0.195
360	0.069	0.136	0.557	0.547	1.042	2.901	0.205
420	0.072	0.143	0.587	0.571	1.087	3.047	0.216
480	0.076	0.150	0.617	0.594	1.131	3.189	0.226
540	0.079	0.158	0.646	0.616	1.172	3.329	0.236
600	0.083	0.165	0.676	0.637	1.212	3.465	0.247
660	0.086	0.172	0.705	0.657	1.251	3.598	0.257
720	0.090	0.179	0.734	0.676	1.288	3.728	0.266

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.087	0.157	0.509	0.944	0.970	3.325	0.242
10	0.173	0.310	1.006	1.849	1.901	4.308	0.455
20	0.338	0.606	1.970	3.544	3.644	6.174	0.864
30	0.496	0.888	2.891	5.087	5.230	7.909	1.249
40	0.646	1.156	3.770	6.475	6.658	9.510	1.610
50	0.788	1.410	4.606	7.711	7.928	10.980	1.948
60	0.923	1.650	5.399	8.793	9.041	12.317	2.263
120	1.491	2.638	8.673	7.451	7.661	16.477	3.218

180	1.051	1.868	6.120	7.669	7.885	12.309	2.418
240	1.145	2.034	6.683	7.894	8.116	13.401	2.609
300	1.228	2.179	7.177	8.126	8.355	14.408	2.779
360	1.299	2.305	7.601	8.365	8.601	15.329	2.929
420	1.359	2.411	7.956	8.612	8.854	16.163	3.058
480	1.408	2.497	8.241	8.865	9.115	16.912	3.166
540	1.445	2.562	8.458	9.126	9.383	17.575	3.253
600	1.471	2.608	8.605	9.394	9.659	18.151	3.319
660	1.485	2.634	8.682	9.669	9.942	18.642	3.364
720	1.488	2.641	8.690	9.952	10.232	19.047	3.389

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.031	0.068	0.580	0.180	0.397	0.164	0.120
10	0.032	0.071	0.600	0.271	0.598	0.206	0.130
20	0.035	0.077	0.637	0.432	0.952	0.280	0.148
30	0.037	0.082	0.670	0.562	1.239	0.342	0.163
40	0.039	0.086	0.699	0.663	1.462	0.390	0.175
50	0.040	0.090	0.724	0.735	1.619	0.425	0.184
60	0.042	0.092	0.744	0.776	1.711	0.448	0.191
120	0.045	0.101	0.819	0.788	1.736	0.453	0.206
180	0.047	0.105	0.828	0.785	1.730	0.451	0.209
240	0.047	0.104	0.821	0.781	1.720	0.444	0.207
300	0.046	0.103	0.811	0.775	1.707	0.435	0.205
360	0.045	0.101	0.795	0.767	1.691	0.425	0.201
420	0.044	0.098	0.776	0.758	1.671	0.412	0.197
480	0.043	0.095	0.752	0.748	1.648	0.398	0.191
540	0.042	0.092	0.724	0.736	1.621	0.382	0.185
600	0.040	0.088	0.691	0.722	1.591	0.364	0.178
660	0.038	0.084	0.654	0.707	1.558	0.344	0.170
720	0.035	0.079	0.613	0.690	1.521	0.322	0.161

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.306	15.476	21.784	2.802	2.360	13.054	13.893
10	13.765	17.332	24.454	5.589	4.707	15.243	15.705
20	17.189	21.681	30.687	11.116	9.362	19.542	19.885
30	21.290	26.880	38.109	16.580	13.965	23.735	24.806
40	26.068	32.927	46.722	21.983	18.515	27.822	30.470
50	31.522	39.823	56.524	27.324	23.013	31.803	36.875
60	37.653	47.568	67.516	32.602	27.459	35.678	44.021
120	88.165	111.193	157.340	55.451	46.703	53.073	101.427
180	100.022	126.170	178.593	65.511	55.176	57.350	115.208
240	111.872	141.133	199.813	74.978	63.149	61.377	128.940
300	123.715	156.083	221.000	83.850	70.622	65.153	142.624
360	135.551	171.018	242.153	92.129	77.594	68.677	156.259
420	147.381	185.939	263.273	99.814	84.067	71.950	169.846
480	159.203	200.847	284.359	106.906	90.040	74.973	183.384
540	171.019	215.740	305.411	113.403	95.512	77.744	196.874
600	182.827	230.619	326.430	119.307	100.484	80.264	210.315
660	194.629	245.484	347.415	124.617	104.957	82.533	223.708

720	206.424	260.335	368.367	129.333	108.929	84.550	237.052

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.000	0.000
50	0.000	0.000	0.001	0.000	0.000	0.001	0.000
60	0.000	0.000	0.001	0.000	0.000	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.001
360	0.001	0.002	0.002	0.001	0.001	0.001	0.002
420	0.001	0.002	0.003	0.001	0.001	0.001	0.002
480	0.002	0.002	0.003	0.001	0.001	0.001	0.002
540	0.002	0.002	0.003	0.001	0.001	0.001	0.002
600	0.002	0.002	0.003	0.001	0.001	0.001	0.002
660	0.002	0.002	0.003	0.001	0.001	0.001	0.002
720	0.002	0.003	0.004	0.001	0.001	0.001	0.002

Pollutant Name: PM2.5 Temperature: 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.001	0.001	0.000	0.000	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.001
20	0.002	0.003	0.003	0.001	0.001	0.004	0.002
30	0.002	0.005	0.005	0.002	0.002	0.003	0.004
40	0.003	0.007	0.007	0.002	0.002	0.003	0.005
50	0.004	0.008	0.008	0.003	0.003	0.002	0.006
60	0.005	0.010	0.009	0.003	0.003	0.002	0.007
120	0.008	0.016	0.015	0.004	0.005	0.005	0.011
180	0.009	0.018	0.017	0.005	0.005	0.006	0.012
240	0.009	0.019	0.019	0.005	0.005	0.008	0.013
300	0.010	0.021	0.020	0.005	0.005	0.010	0.014
360	0.011	0.022	0.021	0.005	0.005	0.011	0.015
420	0.011	0.023	0.022	0.005	0.005	0.012	0.016
480	0.012	0.024	0.023	0.005	0.005	0.013	0.016
540	0.012	0.025	0.024	0.005	0.006	0.014	0.017
600	0.012	0.025	0.024	0.006	0.006	0.014	0.017
660	0.012	0.025	0.025	0.006	0.006	0.014	0.017
720	0.012	0.025	0.025	0.006	0.006	0.015	0.017

Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/01/30 08:36:02
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Francisco
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin
Average

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity:
ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.014	0.033	0.027	0.003	0.013	0.121	0.022
10	0.026	0.060	0.050	0.005	0.025	0.225	0.040
20	0.045	0.103	0.086	0.009	0.043	0.391	0.069
30	0.057	0.133	0.111	0.012	0.055	0.512	0.088
40	0.062	0.144	0.120	0.013	0.059	0.560	0.096

Hot soak results are scaled to reflect zero emissions for trip lengths of less than
5 minutes (about 25% of in-use trips).

Title : San Francisco Air Basin Avg Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/01/30 08:36:02
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Francisco
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin
Average

Table 5a: Partial Day Diurnal Loss Emissions
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity:
ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.013	0.033	0.037	0.001	0.001	0.166	0.026

Title : San Francisco Air Basin Avg Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/01/30 08:36:02
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Francisco
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.001	0.002	0.002	0.000	0.000	0.016	0.002

Title : San Francisco Air Basin Avg Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/01/30 08:36:02
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Francisco
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.007	0.022	0.026	0.001	0.000	0.060	0.015

Title : San Francisco Air Basin Avg Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/01/30 08:36:02
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Francisco
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin
Average

Table 6b: Multi-Day Resting Loss Emissions
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity:
ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
60	0.001	0.001	0.002	0.000	0.000	0.006	0.001

Title : San Francisco Air Basin Avg Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/01/30 08:36:02
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Francisco
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin
Average

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity:
ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.526	0.336	0.089	0.037	0.004	0.008	1.000
%TRIP	0.509	0.299	0.124	0.057	0.001	0.010	1.000
%VEH	0.540	0.324	0.082	0.021	0.001	0.032	1.000

Title : San Francisco Air Basin Avg Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2008/01/30 08:36:02
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Francisco
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Francisco Basin Average Basin Average

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.007	0.167	0.196	0.042	0.214	0.004	0.079
2	0.006	0.088	0.103	0.022	0.110	0.038	0.043
3	0.006	0.064	0.074	0.016	0.076	0.057	0.033
4	0.007	0.053	0.062	0.013	0.060	0.068	0.028
5	0.008	0.047	0.054	0.011	0.050	0.077	0.026
10	0.011	0.035	0.041	0.008	0.032	0.099	0.023
15	0.013	0.033	0.038	0.008	0.028	0.113	0.022
20	0.014	0.033	0.038	0.008	0.027	0.123	0.023
25	0.015	0.034	0.039	0.008	0.028	0.133	0.024
30	0.015	0.036	0.041	0.008	0.029	0.140	0.025
35	0.016	0.037	0.042	0.009	0.031	0.147	0.026
40	0.016	0.038	0.044	0.009	0.032	0.154	0.027
45	0.017	0.040	0.045	0.009	0.033	0.160	0.028
50	0.018	0.041	0.047	0.010	0.034	0.166	0.029
55	0.018	0.042	0.048	0.010	0.036	0.172	0.030
60	0.019	0.043	0.049	0.010	0.037	0.177	0.031

HEALTH RISK ASSESSMENT

HERCULES NEW TOWN CENTER

CITY OF HERCULES, CALIFORNIA

LSA

February 2008

HEALTH RISK ASSESSMENT

HERCULES NEW TOWN CENTER

CITY OF HERCULES, CALIFORNIA

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LSA

February 2008

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1.0 EXECUTIVE SUMMARY

LSA Associates, Inc. (LSA) was retained by RBF Consulting to prepare a health risk analysis for the proposed Hercules New Town Center (HNTC) project located in the City of Hercules in Contra Costa County, California.

The health risk analysis provides a discussion of the proposed project, the physical setting of the project area, and the regulatory framework for health risks. The report provides data on existing health conditions, evaluates potential health risk impacts on future residents living within the proposed project area, and identifies feasible mitigation measures recommended for potentially significant impacts. Modeled health risk levels are based upon emissions of vehicles operating on the nearby Interstate 80 (I-80) and State Route 4 (SR-4) freeways.

The evaluation was prepared in conformance with appropriate standards, utilizing procedures and methodologies in the Office of Environmental Health Hazard Assessment (OEHHA) Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2003) and the Bay Area Air Quality Management District (BAAQMD) California Environmental Quality Act (CEQA) Guidelines (BAAQMD 1999).

This analysis determined that there will be no significant health impacts to people living in the project area from vehicular traffic on I-80 and SR-4.

2.0 INTRODUCTION

A Health Risk Assessment (HRA) is one tool used in risk management. It is a process used to estimate the increased risk of health problems in people who are exposed to different amounts of toxic substances. An HRA combines results of studies on the health effects of various animal and human exposures to toxic air pollutants with results of studies that estimate the level of people's exposures at different distances from the sources of the pollutants. While the estimates provided by these risk assessments are far from perfect, they do help evaluate the risks associated with emissions of toxic air pollutants. Using risk estimates and other factors, the government can set regulatory standards to reduce people's exposures to toxic air pollutants and reduce the risk of experiencing health problems.

The toxic air pollutants of greatest concern are those that cause serious health problems or affect many people. Health problems can include cancer, respiratory irritation, nervous system problems, and birth defects. Some health problems occur very soon after a person inhales a toxic air pollutant. These immediate effects may be minor, such as watery eyes. Or they may be serious, such as life-threatening lung damage. Other health problems may not appear until many months or years after a person's first exposure to the toxic air pollutant. Cancer is one example of a delayed health problem.

An exposure assessment estimates how much of a pollutant people inhale during a specific time period, as well as how many people are exposed. The first step in an exposure assessment is to decide which sources are giving off the pollutant of concern. The next step is to determine the amounts of the toxic air pollutant released in a specific time period and how it moves away from the source(s). Either air monitors or computer models are used to estimate the amount of pollutant released from the source and the amount of pollutant at different distances from the source. Computer models use mathematical equations that represent the processes that occur when a facility releases a pollutant and also the movement of pollutants through the air. Factors such as distance from the source to exposed persons, wind speed and direction, and smokestack height (for factories) affect these estimates.

The number of people exposed at different distances from the site of release can be estimated with computer models that use information from the census and from maps. Some models can even estimate exposures for the different places people are each day, including indoor, automobile, outdoor, and workplace exposures.

The final step in an exposure assessment is to estimate the amounts each person inhales. To do this, scientists combine estimates of breathing rates and lifespan of an average person with estimates of the amount of pollutant in that person's air.

3.0 SETTING

3.1 PROJECT SUMMARY

The proposed HNTC project consists of two elements. First, the City of Hercules Redevelopment Agency (City RDA) and Hercules New Town Center LLC (project sponsor) propose amendments to the Hercules General Plan (General Plan) and Zoning Ordinance to create a "New Town Center" (NTC) mixed-use land use designation and zoning district that would apply to the HNTC planning area. Second, the City RDA and the project sponsor propose redevelopment of one parcel within the HNTC planning area (Market Town). The two project elements are described in detail below.

3.2 PROJECT LOCATION

The HNTC planning area is located within the City, in Contra Costa County, California. The City is located along the eastern edge of the San Pablo Bay, approximately 25 miles northeast of San Francisco (refer to Figure 1, Project Location). Six of the seven parcels that compose the planning area are located southeast of the I-80 and SR-4 interchange, and one parcel is located immediately southwest of the interchange. Together, the parcels total approximately 35 acres that are generally bounded by SR-4 to the north; Sycamore Avenue, Willow Avenue, and railroad tracks to the south; Palm Avenue to the east; and San Pablo Avenue to the west. The entire planning area is subject to the proposed General Plan designation and zoning district modifications. Refer to Figure 2 (Site Plan). The numbered areas refer to parcels composing the total project.

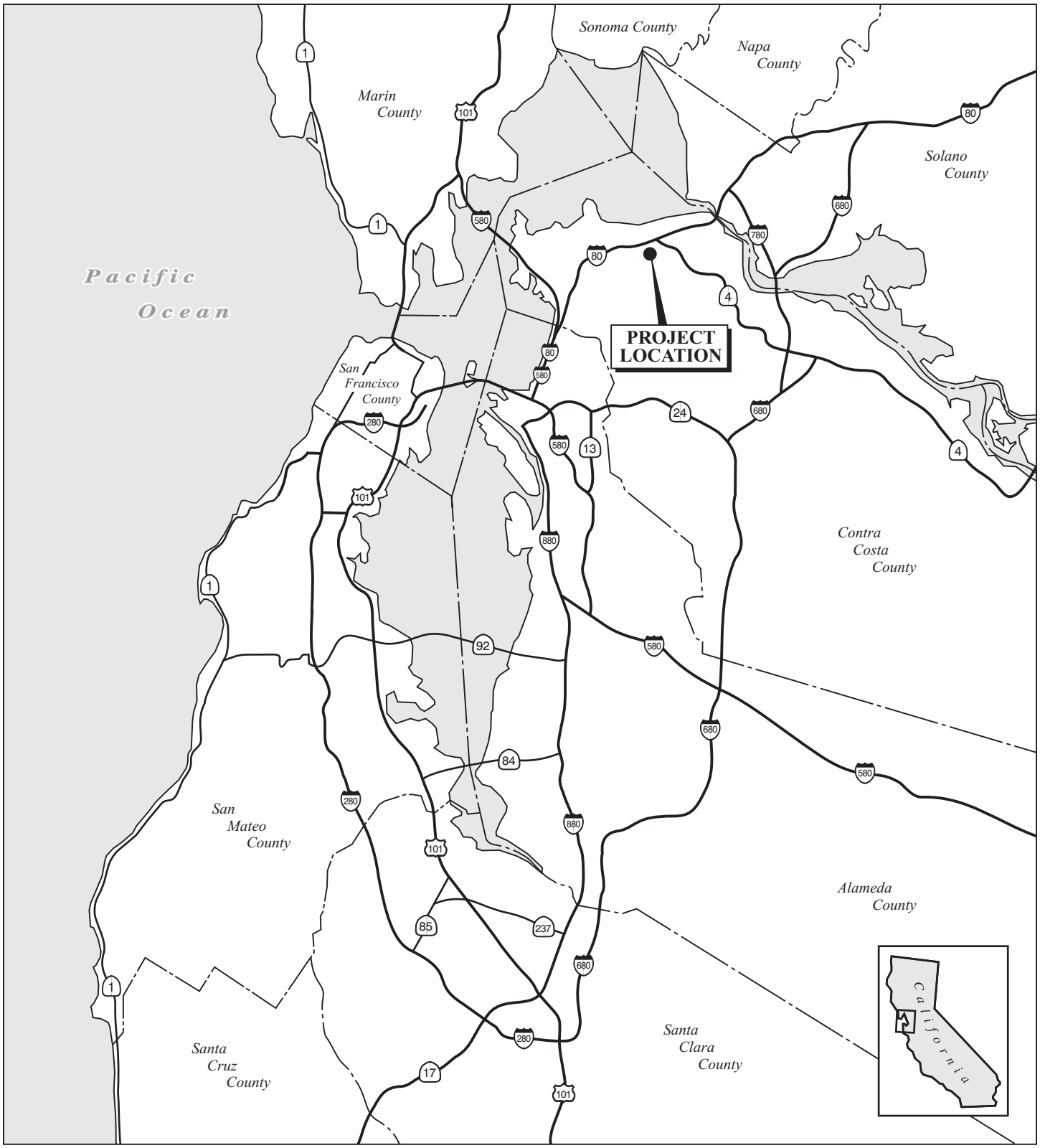
The parcel within the planning area currently proposed for redevelopment is Parcel 1 (PNR parcel). The approximately 6.6-acre PNR parcel is located immediately southwest of the I-80 and SR-4 interchange and is bounded by SR 4 to the north, Sycamore Avenue to the south, I-80 to the east, and San Pablo Avenue to the west.

3.3 SURROUNDING LAND USES

The PNR parcel is part of the larger HNTC planning area that contains a total of seven parcels. The following describes land uses surrounding the entire HNTC planning area, as well as the land uses surrounding the PNR parcel.

The project site is bordered by Lytle Creek Road (west), Sierra Lakes Parkway (north), Maloof Avenue (east), and Highland Channel (south). SR-210 parallels the south side of Highland Channel.

This area appears on the United States Geological Survey (USGS) Devore 7.5′ Quadrangle (1967, photo revised 1980, 1988, and 1996) in the southwest quarter of Section 25, Township 1 North, Range 6 West of the San Bernardino Base/Meridian. The elevation of the project site is approximately 1,500 feet (ft) (457 meters [m]) above mean sea level (amsl).



LSA

FIGURE 1

N

0 5 10

MILES

Hercules Town Center

Regional Location

I:\RBF0801\G\Location.cdr (2/8/08)

LSA

FIGURE 2

N

NO SCALE

SOURCE: RBF Consulting

Hercules Town Center

Site Plan

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3.4 REGIONAL AIR QUALITY

The BAAQMD publishes the Toxic Air Contaminant Control Program Annual report designed to provide the public with information regarding the District's programs to reduce ambient concentrations of toxic air contaminants (TACs). The report summarizes the status of the programs that are used to identify and control TACs from stationary sources (Volume I), and contains summaries of the TAC emissions inventory and ambient monitoring network (Volume II).

The 2007 report covers data from 2003. It says monitoring is considered the definitive method for establishing ambient pollutant concentrations. One limitation of air monitoring is that it is spatially limited to specific monitoring locations. This problem has been minimized to a great extent in the Bay Area by the operation of an extensive air toxics monitoring network. The network began in 1986 with six sites and has gradually been expanded to its present size of 20 sites. The sampling sites in the network are generally community-oriented, and are most directly influenced by area wide sources.

Table A shows the lifetime cancer risks associated with exposure to annual average TAC concentrations measured in the Bay Area for calendar year 2003. The total calculated lifetime cancer risk is 143 in 1 million. This cancer risk was calculated based on inhalation exposures using the Unit Risk Factors and exposure assumptions adopted by The Office of Environmental Health Hazard Assessment (OEHHA) for the Air Toxics HotSpot Program. All of the carcinogenic TACs measured in the BAAQMD and California Air Resources Board (CARB) monitoring networks in 2003 are included, except for ethylene dibromide, ethylene dichloride, and vinyl chloride, which were excluded because these compounds were not detected in any of the air samples taken. In calculating average concentrations for TACs, samples with concentrations less than the limit of detection (LOD) of the analytical method used were assumed to be equal to one half the LOD concentration. The total cancer risk resulting from exposure to the mixture of various measured TACs was assumed to be additive.

Of the pollutants for which monitoring data are available, 1,3-butadiene and benzene, which are primarily emitted from mobile sources, contribute most significantly to the inhalation cancer risk. These two pollutants together account for 51 percent of the total risk. Other pollutants with contributions to the average inhalation cancer risk of 3 percent or more are carbon tetrachloride, hexavalent chromium, and formaldehyde.

The average ambient levels of benzene dropped significantly in 1996 due to the widespread use of Phase 2 reformulated gasoline, which began in the Bay Area in the second quarter of 1996. The network average benzene level has continued to drop, and by the end of 2003, the benzene level had decreased to 36 percent of what was observed in 1995. A number of control measures already adopted by CARB should provide additional, although more gradual, reductions in mobile-source-related emissions of benzene and 1,3-butadiene in the future. These include the Low-Emission Vehicle/Clean Fuels (LEV) program and requirements for utility engines and off-road vehicles/engines.

Carbon tetrachloride accounts for 20 percent of the 2003 average calculated cancer risk. Carbon tetrachloride exists at background levels in the air of about 0.10 to 0.13 parts per billion nearly uniformly on a global basis. It is believed that the emissions from stationary sources have globally accumulated in the atmosphere due to this compound's very long residence time. The production of carbon tetrachloride in the United States was banned beginning in 1996.

Table A: Cancer Risk Due to Average Ambient Concentrations of Toxic Air Contaminants Measured in the Bay Area in 2003 [1]

Gaseous TACs	Concentration		Unit Risk	Cancer Risk
	Ppb	µg/m^3	(µg/m^3)−1	Chances in 1 Million
1,3-Butadiene[1,3]	0.09	0.21	1.7E-04	36.0
Benzene[2]	0.40	1.30	2.9E-05	37.7
Carbon Tetrachloride[2]	0.11	0.70	4.2E-05	29.1
Formaldehyde[1]	2.18	2.72	6.0E-06	16.3
Acetaldehyde[1]	0.72	1.32	2.7E-06	3.6
Perchloroethylene[2]	0.03	0.18	5.9E-06	1.1
Methylene Chloride[2]	0.36	1.27	1.0E-06	1.3
MTBE[2]	0.53	1.95	2.6E-07	0.5
Chloroform[2]	0.02	0.12	5.3E-06	0.6
Trichloroethylene[1,3]	0.02	0.12	2.0E-06	0.2
Particulate TACs	**ng/m^3**	**µg/m^3**	**(µg/m^3)−1**	**Chances in 1 Million**
Chromium (hexavalent)[1]	0.10	1.00E-04	1.5E-01	14.4
Dioxin[4]	0.000025	2.50E-08	3.8E+01	1.0
Nickel[1]	3.30	3.30E-03	2.6E-04	0.8
PAHs[1,5]	0.47	4.70E-04	1.1E-03	0.5
Lead[1]	7.80	7.8E-03	1.2E-05	0.1
Total for all TACs				**143**

Notes:
Table A summarizes the cancer risks associated with exposure to average ambient (outdoor) toxic air TAC levels measured at a number of sites in the Bay Area during 2003. Cancer risks are calculated for the inhalation pathway using the Unit Risk Factors adopted by the California Environmental Protection Agency's (Cal/EPA's) OEHHA for the Air Toxics Hot Spots Program, and assuming 70-year continuous exposure. Risks are calculated for the carcinogenic TACs for which routine sampling was performed by the BAAQMD or CARB in 2003, except for ethylene dibromide, ethylene dichloride, and vinyl chloride, which were excluded because none of these were detected in any of the air samples taken. In calculating average concentrations, samples less than the LOD were assumed to be equal to one-half the LOD concentration.

1 The concentration used is the mean of all daily samples taken for the three Bay Area sites in the CARB network in 2003 (the Fremont, San Francisco – Arkansas St., and San Jose – Jackson St. sites). Note that CARB began sampling for acrylonitrile at these three sites in mid-2003; data are not included in the cancer risk calculation for 2003 but will be available for 2004 and beyond.

2 The concentration used is the mean of all daily samples taken for the BAAQMD network in 2003.

3 CARB data are used for this TAC because an analytical method with a lower LOD was used by CARB.

4 The dioxin concentration represents the average annual chlorinated dioxin and furan concentrations (expressed as 2,3,7,8-TCDD TEQs using WHO-97 TEFs) at the following CADAMP sites: Crockett, Livermore, Oakland, Richmond, and San Jose.

5 The polycyclic aromatic hydrocarbon (PAH) concentration represents the sum of the following species collected as PM_{10}: benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

[1] From the BAAQMD *Toxic Air Contaminant Control Program Annual Report,* August 2007

Hexavalent chromium accounts for about 10 percent of the average cancer risk calculated for 2003. The Bay Area network average ambient hexavalent chromium concentration for the year 2003 is approximately the same as what was observed five years earlier. Over the past 10 years, the hexavalent chromium concentration had been decreasing until 1998, and since then, the concentration has remained fairly steady. The relatively uniform geographic distribution of ambient hexavalent chromium levels suggests that emissions occur primarily on an area-wide, rather than a point-source, basis.

Formaldehyde accounts for about 11 percent of the 2003 average calculated cancer risk for the Bay Area. Formaldehyde is emitted directly from vehicles and other combustion sources, and is also created during photochemical reactions in the atmosphere. The District-wide average formaldehyde concentration level for 2003 is about 20 percent higher than what was observed five years earlier.

There is growing evidence that indicates that exposure to emissions from diesel-fueled engines, about 95 percent of which come from diesel-fueled mobile sources, may result in cancer risks that exceed those attributed to other measured TACs. In 1998, OEHHA issued an HRA that included estimates of the cancer potency of diesel particulate matter (PM). Because diesel PM cannot be directly monitored in the ambient air, however, estimates of cancer risk resulting from diesel PM exposure must be based on concentration estimates made using indirect methods (e.g., derivation from ambient measurements of a surrogate compound). Based on CARB estimates of the population-weighted average ambient diesel PM concentration for the Bay Area and the best-estimate cancer potency factor adopted by OEHHA, the approximate cancer risk associated with exposure to diesel PM for 2003 is about 500 to 700 in 1 million.

One group of pollutants that have not been routinely monitored in ambient air is polychlorinated dioxins and furans (generally referred to as “dioxin”). In an effort to improve the understanding of the levels of dioxin in the ambient air in the Bay Area and their deposition onto land and water surfaces, the BAAQMD has begun an ambient air dioxin monitoring program. Monitoring began at the first site in this network when sampling began at Ft. Cronkhite on November 22, 2000. The Ft. Cronkhite site has been established as part of the United States Environmental Protection Agency’s (EPA) National Dioxin Air Monitoring Network (NDAMN). Six additional dioxin air monitoring sites were also started up in 2001, with sites in Crockett, Livermore, Oakland, Richmond, San Jose, and San Francisco (the Crockett and Oakland locations were SB-25 monitoring sites that were shutdown in the first half of 2003). Based on monitoring data gathered during 2003, the calculated inhalation cancer risk associated with dioxin exposure in the Bay Area (using the OEHHA cancer potency factor) is about 1 in 1 million.

3.5 REGULATORY SETTINGS

3.5.1 Federal Regulations/Standards

The 1990 Clean Air Act Amendments (CAAA) Section 112(k) require the EPA to reduce hazardous air pollutant (HAP) risks in urban areas. The EPA’s strategy for reducing these risks is discussed in the Integrated Urban Air Toxics Strategy (EPA 1999b). Among the major new programs are the acid rain provisions (Title IV), the operating permits program (Title V), and provisions to phase out ozone (O_3)-depleting substances (Title VI). Existing programs that have seen major changes due to the amendments include attainment provisions for National Ambient Air Quality Standards (NAAQS)

and the National Emissions Standards for Hazardous Air Pollutants (NESHAP) program, both under Title I of the Clean Air Act (CAA). (Note that while the new NESHAP provisions were found in Title III of the 1990 amendments, these provisions amended Title I of the CAA; therefore, the appropriate citation for the NESHAP program is Title I of the CAA.)

Title I of the CAA includes the provisions for attaining the NAAQS for criteria pollutants and provisions for controlling emissions of HAP. The criteria pollutants are carbon monoxide (CO), sulfur dioxide (SO_2), NO_X, lead (Pb), particulates, and O_3. Some of the primary standards and programs addressing the criteria pollutants include New Source Review (NSR), State Implementation Plans (SIP), and New Source Performance Standards (NSPS).

The provisions in Title I that address the control of HAP emissions, or air toxics, are found in Section 112. Section 112 of the CAA and include provisions for the promulgation of NESHAP, or maximum achievable control technology (MACT) standards, as well as several related programs to enhance and support the NESHA Program. The activities and responsibilities required under Section 112 directly affect not only the EPA but State and local regulatory agencies as well. The complexity and number of these requirements necessitate a high degree of coordination and cooperation between the regulators to ensure that these programs are carried out effectively. At the federal level, the majority of Section 112 is the responsibility of the Office of Air Quality, Planning and Standards (OAQPS) within the EPA's Office of Air and Radiation (OAR) located in Durham, North Carolina.

3.5.2 State Regulations/Standards

The ARB Statewide comprehensive air toxics program was established in the early 1980s. The Toxic Air Contaminant Identification and Control Act (AB 1807, Tanner 1983) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly 1987) supplements the AB 1807 program by requiring a Statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Under AB 1807, the ARB is required to use certain criteria in the prioritization for the identification and control of air toxics. In selecting substances for review, the ARB must consider criteria relating to "the risk of harm to public health, amount or potential amount of emissions, manner of, and exposure to, usage of the substance in California, persistence in the atmosphere, and ambient concentrations in the community" (Health and Safety Code Section 39666[f]). AB 1807 also requires the ARB to use available information gathered from the AB 2588 program to include in the prioritization of compounds.

AB 2588 "Hot Spots" Program. In September 1987, the California Legislature established the AB 2588 air toxics "Hot Spots" program. It requires facilities to report their air toxics emissions, ascertain health risks, and notify nearby residents of significant risks. The emissions inventory and risk assessment information from this program has been incorporated into this report. In September 1992, the "Hot Spots" Act was amended by Senate Bill 1731, which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

3.6 REGIONAL PLANNING FRAMEWORK

The 1976 Lewis Air Quality Management Act established the BAAQMD and other air districts throughout the State. The CAA Amendments of 1977 required that each state adopt an implementation plan outlining pollution control measures to attain the federal standards in nonattainment areas of the State.

The ARB coordinates and oversees both State and federal air pollution control programs in California. The ARB oversees activities of local air quality management agencies and is responsible for incorporating air quality management plans for local air basins into an SIP for EPA approval. The California Clean Air Act (CCAA) provides the BAAQMD with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example of this would be the motor vehicles at an intersection, a mall, and on highways. As a State agency, the ARB regulates motor vehicles and fuels for their emissions.

3.6.1 Regional Air Quality Management Plan (AQMP)

The BAAQMD prepared the Bay Area 2005 Ozone Strategy in cooperation with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG). The Ozone Strategy is a roadmap showing how the San Francisco Bay Area will achieve compliance with the State one-hour air quality standard for ozone as expeditiously as practicable and how the region will reduce transport of ozone and ozone precursors to neighboring air basins.

The Ozone Strategy describes how the Bay Area will fulfill CCAA planning requirements for the State one-hour ozone standard and transport mitigation requirements through the proposed control strategy. The control strategy includes stationary source control measures to be implemented through Air District regulations; mobile source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with MTC, local governments, transit agencies and others.

The 2005 Ozone Strategy also discusses related air quality issues of interest including our public involvement process, climate change, fine particulate matter, the Air District's Community Air Risk Evaluation (CARE) program, local benefits of ozone control measures, the environmental review process, national ozone standards and photochemical modeling.

4.0 METHODOLOGY

A computer model, the Hot Spots Analysis and Reporting Program (HARP), developed by Dillingham Software Engineering, Inc. for OEHHA, ARB, and local districts, including BAAQMD to perform HRAs, was used in this analysis. The HARP software is the recommended model for calculating and presenting HRA results for the "Hot Spots" Program. HARP is a computer software package that combines the tools of emission inventory database, facility prioritization calculation, air dispersion modeling, and risk assessment analysis. All of these tools are tied to a single database allowing information to be shared and utilized.

The first step in the analysis is identifying any health hazards caused by toxic air contaminants in the area of the project. If a hazard is identified, the exact pollutant(s) of concern are identified in terms of whether it is a potential human carcinogen or is associated with other types of adverse health effects. The second step is to estimate the extent of public exposure to each substance for which potential cancer risk of acute and chronic noncancer effects will be evaluated. In the absence of clear evidence to the contrary, it is assumed that no exposures have "zero risk;" even a very low exposure to a cancer-causing pollutant can increase the risk of cancer (albeit a small amount). It is also assumed that the relationship between dose and response is a straight line; for each unit of increase in exposure (dose), there is an increase in cancer response. The third step is to determine the dose-response relationship (the response occurring with increasing dose), which varies with pollutant, individual sensitivity, and type of health effect.

The final step combines the results of the exposure assessment and the dose-response assessment to characterize the health risk levels. It gives an estimate of the increased lifetime risk of cancer for an individual exposed to the maximum predicted long-term concentration. Many people may be exposed to less than the maximum level. Depending on the amount of exposure, an individual's risk of cancer will vary. The distribution of individual risk is usually expressed as the number of people estimated to be at various levels of risk. Distributions of individual risk are used to calculate population risk. The population cancer risk is usually expressed as the expected increased incidence of cancer (that is, the number of new cases each year) for all people exposed to the pollutant. For example, the estimated population cancer risk may be the number of new cancer cases per year expected among residents within 30 miles of a certain large source.

Health reference levels refer to exposure levels that will not cause significant risks of noncancer health effects. Long-term exposure to levels below these levels are assumed to produce no ill effects. Health reference levels are an example of one index that government agencies use in characterizing non-cancer health risks. These levels are generally developed from exposure levels that do not produce ill effects in experimental animals. These exposure levels are adjusted to account for animal-human differences (such as breathing rate) and for underlying uncertainties (such as the difference in sensitivity between healthy adults and more sensitive people like children and the elderly). Risk analysts then compare the health reference levels with the exposure estimates to determine how many people are exposed to concentrations higher than the health reference level. Some of these people might experience ill effects.

Although scientists can estimate risks caused by toxic air pollutants in animals experimentally or in humans who have unusual exposures, converting these estimates to those expected in people under a wide range of conditions is difficult and can be misleading.

By their nature, risk estimates cannot be completely accurate. The main problem is that scientists do not have enough information on actual exposure and on how toxic air pollutants harm human cells. The exposure assessment often relies on computer models when the amount of pollutant getting from the source(s) to people cannot be easily measured. Dose-response relationships often rely on assumptions about the effects of pollutants on cells for converting results of animal experiments at high doses to human exposures at low doses.

When information is missing or uncertain, risk analysts generally make assumptions that tend to prevent them from under estimating the potential risk; that is, these assumptions provide a margin of safety in the protection of human health.

4.1 THRESHOLD OF SIGNIFICANCE

Health Risk Analysis Thresholds

For pollutants without defined significance standards or air contaminants not covered by the State and federal ambient air quality standards, the definition of substantial pollutant concentrations varies. For TACs, "substantial" is taken to mean that the individual cancer risk exceeds a threshold considered to be a prudent risk management level. If best available control technology for toxics (T-BACT) has been applied, the individual cancer risk to the maximum exposed individual (MEI) must not exceed 10 in 1 million in order for an impact to be determined not to be significant.

Airborne impacts are also derived from materials considered to be a nuisance for which there may not be associated standards. Odors or the deposition of large diameter dust particles outside the PM_{10} size range would be included in this category. It is considered a significant impact for odors and large diameter dust particles if the BAAQMD nuisance (Rule 6-1-305) would be potentially violated.

The following limits for maximum individual cancer risk (MICR), cancer burden, and noncancer acute and chronic hazard indices (HI) from project emissions of TACs have been established for the Basin:

- **MICR and Cancer Burden.** (MICR is the estimated probability of a potential maximally exposed individual contracting cancer as a result of exposure to TACs over a period of 70 years for residential and 46 years for worker receptor locations. The MICR calculations include multipathway consideration, when applicable. Cancer Burden is the estimated increase in the occurrence of cancer cases in a population subject to a MICR of greater than or equal to one in one million (1.0×10^{-6}) resulting from exposure to TACs.)

  The cumulative increase in MICR that is the sum of the calculated MICR values for all TACs emitted from the project will not result in any of the following:

(A) an increased MICR greater than 10 in 1 million (1.0×10^{-5}) at any receptor location (assumes the project will be constructed with T-BACT)

(B) a cancer burden greater than 0.5

- **Chronic HI.** (This is the ratio of the estimated long-term level of exposure to a TAC for a potential maximally exposed individual to its chronic reference exposure level. The chronic hazard index calculations include multipathway consideration, when applicable.)

  The cumulative increase in total chronic HI for any target organ system due to total emissions from the project will not exceed 1.0 at any receptor location.

- **Acute HI.** (This is the ratio of the estimated maximum one-hour concentration of a TAC for a potential maximally exposed individual to its acute reference exposure level.)

  The cumulative increase in total acute HI for any target organ system due to total emissions from the project will not exceed 1.0 at any receptor location.

- **Risk per year.** The risk per year shall not exceed 1/70 of the maximum allowable risk specified above at any receptor locations in residential areas.

5.0 HEALTH RISK ASSESSMENT

5.1 HEALTH RISKS TO FUTURE RESIDENTS

This section examines the potential health effects on future residents from the long-term exposure to vehicular traffic on I-80 and SR-4. HRAs are based on assuming the worst case of an individual living 70 years in one house, actually residing in that house 350 days out of every year and 24 hours of each of those days. Most people do not stay in one house their entire lifetime, and only stay home all 24 hours in any given day on rare occasions. This assessment includes both the required 70-year risks plus 30-year risks to represent the more realistic exposure any resident will have. This assessment focuses on the risks from diesel exhaust particulate and gasoline exhaust VOC emissions. The OEHHA has determined that long-term exposure to diesel exhaust particulates poses the highest cancer risk of any toxic air contaminant it has evaluated. Fortunately, improvements to diesel fuel and diesel engines have already reduced emissions of some of the contaminants, which, when fully implemented, will result in a 75 percent reduction in particle emissions from diesel-powered trucks and other equipment by 2010 (compared to 2000 levels) and an 85 percent reduction by 2020.

There are currently no federal project-level requirements for air toxics analysis, and CEQA only requires a consideration of the risks from toxics, with the BAAQMD providing the *Toxic Air Contaminant Control Program Annual Report* (August 2007) for guidance. The BAAQMD has established a maximum individual cancer risk significance threshold of 10 in 1 million (1.0×10^{-5}) (assumes emissions are controlled with best-available control technology for toxics [T-BACT]) and a noncarcinogenic hazard index of 1.0.

According to ARB,[1] when conducting an HRA, the surrogate for whole diesel exhaust is diesel PM and it is used as the basis for the potential risk calculations. When conducting an HRA, the potential cancer risk from inhalation exposure to diesel PM will outweigh the potential noncancer health impacts. Therefore, inhalation cancer risk is required for every HRA. When comparing whole diesel exhaust to speciated diesel exhaust (e.g., PAHs, metals), potential cancer risk from inhalation exposure to whole diesel exhaust will outweigh the multipathway cancer risk from the speciated components. For this reason, there will be few situations where an analysis of multipathway risk is necessary.[2] To estimate the potential cancer risk associated with project-related diesel engine exhaust, a dispersion model is used to translate an emission rate from a source location to a concentration at a receptor location of interest. Dispersion modeling varies from the simpler, more conservative screening-level analysis to the more complex and refined detailed analysis. This assessment was conducted using the ARB health risk model, HARP, which has the EPA dispersion model ISCST3

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1 HARP Model Documentation, Appendix K, *Risk Assessment Procedures to Evaluate Particulate Emissions from Diesel-Fueled Engines*, ARB, http://www.arb.ca.gov/toxics/harp/docs/userguide/appendixK.pdf, February 2005.

2 OEHHA, *Air Toxics Hot Spots Program Risk Assessment Guidelines*, August 2003, Appendix D, *Risk Assessment Procedures to Evaluate Particulate Emissions from Diesel-Fueled Vehicles*, Section B.

built in. In addition to examining the risks from diesel exhaust particulate, this assessment includes the exhaust from gasoline-fueled vehicles.

Based on 2006 Caltrans traffic data[1] there was 185,000 average annual daily traffic (AADT) along I-80 (northbound and southbound combined), of which 2,883 were light-duty trucks (2-axle trucks), 637 were medium-duty trucks (3-axle trucks), and 4,990 were heavy-duty trucks (4- and 5-axle trucks). On SR-4 in 2006, there was 39,500 AADT (eastbound and westbound combined), of which 848 were light-duty trucks, 201 were medium-duty trucks, and 1,286 were heavy-duty trucks. The ARB model, EMFAC2007, was used for emissions factors. Built into the model are assumptions of technological and regulatory changes that will reduce emission rates over time. Because this health risk analysis is examining long-term, 70-year carcinogenic and chronic effects, and because the HARP model only allows for a single emission rate for the entire period, a median set of emission factors from the year 2025 was used to represent the entire period.

For the purposes of this analysis, all vehicle exhaust was modeled as if it came from volume sources located along the two freeways, extending beyond the edge of the proposed project site in each direction to account for wind direction variations. The geometries of the sources are combined with the traffic data and emission factor information described above to derive emission rates for each of the sources for both diesel particulate and gasoline VOC. Within each of the truck categories, data from the URBEMIS2007 model was used to determine the percentage of trucks that are diesel. Table B shows the derivation of the overall on-site diesel exhaust emission rate, which was then distributed over the 22 sources (placed along the I-80 and SR-4 freeways).

Receptors were placed in a general grid extending far enough in all directions to characterize the risk level isopleths for all future residences of the project. 2005 meteorological data from the Phillips Hillcrest[2] area was used to represent the conditions at the project site. While this is older data, this is the State-supplied meteorological data for this area for use with the HARP model. See Appendix A for model input and output.

5.2.1 Acute Project-Related Emission Impacts

The emissions of gasoline-powered vehicles include several TAPs that have acute health effects. Table C shows that the potential for short-term acute exposure will be less than significant to future residents of the proposed project.

5.2.2 Carcinogenic and Chronic Project-Related Emission Impacts

The results of the HRA are shown in Table C. Figure 3 shows isopleths of cancer risk levels resulting from the vehicle emissions near the project site. Individuals that stay in one of the proposed residences for 30 years would be exposed to an inhalation cancer risk of 1 in 1 million, and an individual that stayed for 70 years would be exposed to an inhalation cancer risk of 1.8 in 1 million. Thus, all the residents of the proposed project would be exposed to a health risk from vehicles operating on the I-80 and SR-4 that is less than the 10 in 1 million threshold. The maximum chronic hazard index for any resident is 0.003.

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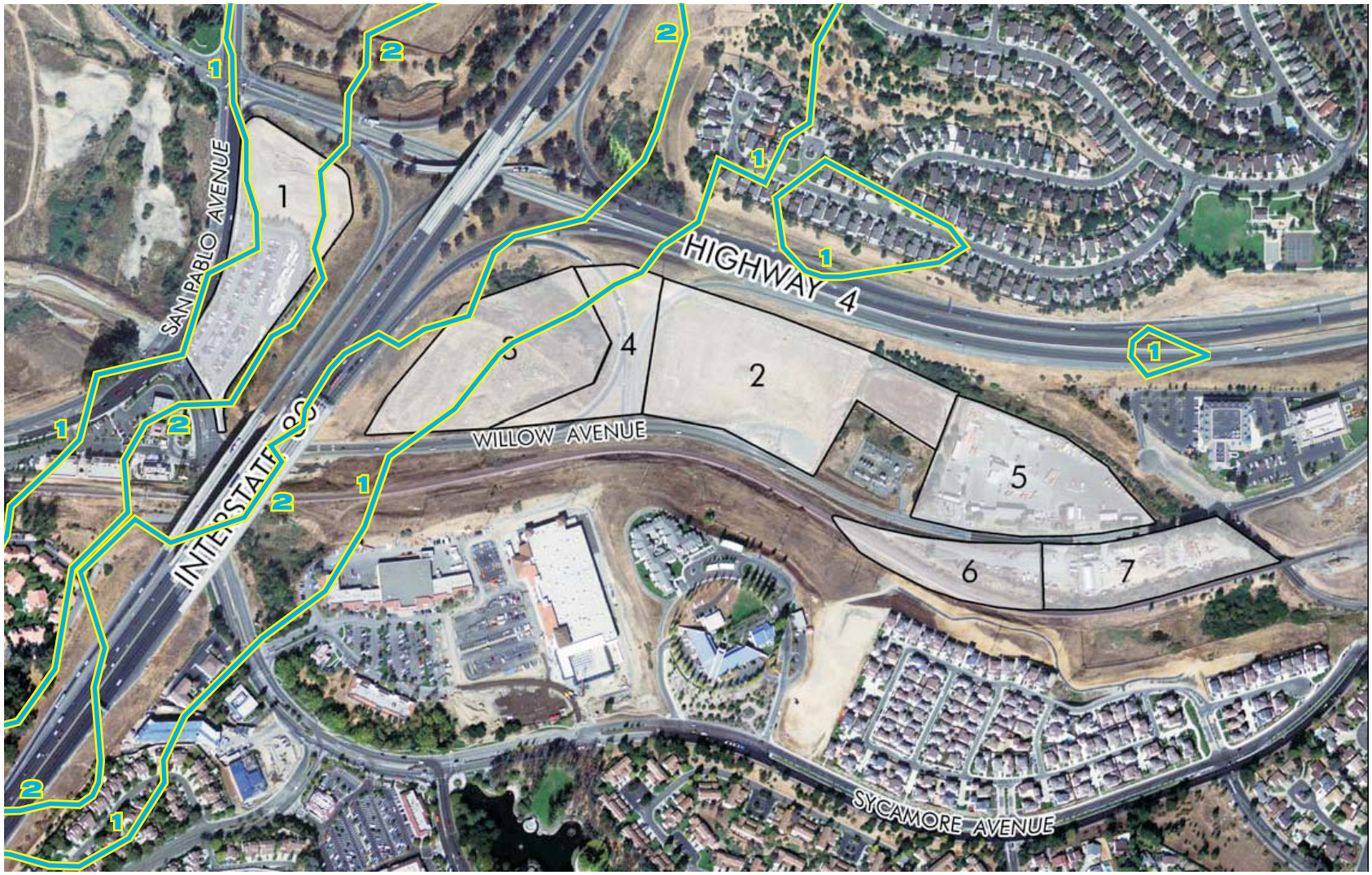
1 http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/

2 Data from BAAQMD Web site: www.baaqmd.gov/tec/data/metdata2774.html



LSA

FIGURE 3

LEGEND

1 - Carcinogenic Risk Level - 1 in 1 Million

2 - Carcinogenic Risk Level - 2 in 1 Million

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NO SCALE

Hercules Town Center

Health Risk Isopleths - Cancer Risk

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Table B: I-80 and SR-4 Diesel Truck Exhaust into ISCST Emissions Rates

Hwy I-80		**Diesel Exhaust PM_{10} Emissions**				**Emission Rates per source**		
		% of Vehicles That Are Diesel				**g/s**	**lb/hr**	**lb/yr**
		LDA	**LDT**	**MDT**	**HDT**			
Total AADT 185,000		0%	20.0%	70.0%	87.5%			
	AADT	0	577	446	4,366			
	60 mph	0	9.40E-06	8.55E-06	4.64E-04	3.45E-05	0.00027	2.4
		Gasoline Exhaust ROG Emissions						
		% of Vehicles That Are Gasoline						
		LDA	**LDT**	**MDT**	**HDT**			
		100%	80.0%	30.0%	12.5%			
	AADT	176,490	2,306	191	624			
	60 mph	2.54E-03	6.19E-05	6.58E-06	8.50E-05	1.92E-04	0.0015	13
Hwy SR-4		**Diesel Exhaust PM_{10} Emissions**				**Emission Rates per source**		
		% of Vehicles That Are Diesel				**g/s**	**lb/hr**	**lb/yr**
		LDA	**LDT**	**MDT**	**HDT**			
Total AADT 39,500		0%	20.0%	70.0%	87.5%			
	AADT		1,691	740	3,652			
	60 mph		4.70E-06	7.20E-06	2.82E-04	2.94E-04	0.00233	20.5
		Gasoline Exhaust ROG Emissions						
		% of Vehicles That Are Gasoline						
		LDA	**LDT**	**MDT**	**HDT**			
		100%	80.0%	30.0%	12.5%			
	AADT	123,917	1,691	740	3,652			
	60 mph	1.38E-03	2.63E-05	6.02E-06	5.24E-05	1.46E-03	0.0116	102

Source: LSA Associates, Inc., February 2008.

Table C: Health Risk Analysis Results

	Cancer Risk (number in 1 million)	**Chronic Hazard Index**	**Acute Hazard Index**
MICR – 30-year exposure	1.0	0.001	0.0005
MICR – 70-year exposure	1.8	0.001	0.0005
Threshold	**10**	**1.0**	**1.0**

LSA Associates, Inc., February 2008.

6.0 REFERENCES

BAAQMD CEQA Guidelines, December 1999.

BAAQMD, *Toxic Air Contaminant Control Program Annual Report,* August 2007.

BAAQMD Web site: www.baaqmd.gov/tec/data/metdata2774.html, accessed January 29, 2008.

California Department of Transportation Traffic Data Web site, www.dot.ca.gov/hq/traffops/saferesr/trafdata/, accessed January 29, 2008.

EPA, *Risk Assessment for Toxic Air Pollutants: A Citizen's Guide,* EPA #450/3-90-024, March 1991.

EPA, Integrated Urban Air Toxics Strategy, 1999.

OEHHA, *Air Toxics Hot Spots Program Risk Assessment Guidelines*, August 2003.

APPENDIX A

HARP MODEL PRINTOUTS

HARP HRA Results

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
1	0.0314	1.92E-05	8.39E-07	561,966	4,208,749	10
2	0.0335	2.05E-05	8.79E-07	562,066	4,208,749	10
3	0.0358	2.19E-05	9.40E-07	562,166	4,208,749	10
4	0.0385	2.36E-05	1.01E-06	562,266	4,208,749	10
5	0.0415	2.54E-05	1.09E-06	562,366	4,208,749	10
6	0.0449	2.74E-05	1.17E-06	562,466	4,208,749	10
7	0.0485	2.97E-05	1.27E-06	562,566	4,208,749	10
8	0.0525	3.21E-05	1.35E-06	562,666	4,208,749	10
9	0.0569	3.48E-05	1.44E-06	562,766	4,208,749	10
10	0.062	3.79E-05	1.51E-06	562,866	4,208,749	10
11	0.0678	4.15E-05	1.59E-06	562,966	4,208,749	10
12	0.0746	4.56E-05	1.69E-06	563,066	4,208,749	10
13	0.0859	5.25E-05	1.88E-06	563,166	4,208,749	10
14	0.097	5.93E-05	2.05E-06	563,266	4,208,749	10
15	0.108	6.63E-05	2.25E-06	563,366	4,208,749	10
16	0.122	7.46E-05	2.42E-06	563,466	4,208,749	10
17	0.137	8.39E-05	2.68E-06	563,566	4,208,749	10
18	0.154	9.44E-05	2.96E-06	563,666	4,208,749	10
19	0.174	1.07E-04	3.30E-06	563,766	4,208,749	10
20	0.197	1.21E-04	3.62E-06	563,866	4,208,749	10
21	0.224	1.37E-04	3.98E-06	563,966	4,208,749	10
22	0.254	1.56E-04	4.30E-06	564,066	4,208,749	10
23	0.293	1.79E-04	4.78E-06	564,166	4,208,749	10
24	0.339	2.08E-04	5.27E-06	564,266	4,208,749	10
25	0.395	2.42E-04	5.51E-06	564,366	4,208,749	10
26	0.466	2.85E-04	5.91E-06	564,466	4,208,749	10
27	0.519	3.17E-04	6.12E-06	564,566	4,208,749	10
28	0.549	3.36E-04	5.74E-06	564,666	4,208,749	10
29	0.594	3.63E-04	5.01E-06	564,766	4,208,749	10
30	0.558	3.41E-04	4.27E-06	564,866	4,208,749	10
31	0.456	2.79E-04	3.60E-06	564,966	4,208,749	10
32	0.369	2.26E-04	3.16E-06	565,066	4,208,749	10
33	0.303	1.86E-04	2.81E-06	565,166	4,208,749	10
34	0.255	1.56E-04	2.51E-06	565,266	4,208,749	10
35	0.218	1.34E-04	2.29E-06	565,366	4,208,749	10
36	0.19	1.16E-04	2.06E-06	565,466	4,208,749	10
37	0.167	1.02E-04	1.86E-06	565,566	4,208,749	10
38	0.149	9.10E-05	1.68E-06	565,666	4,208,749	10
39	0.133	8.15E-05	1.52E-06	565,766	4,208,749	10
40	0.12	7.36E-05	1.38E-06	565,866	4,208,749	10
41	0.109	6.69E-05	1.28E-06	565,966	4,208,749	10
42	0.1	6.12E-05	1.19E-06	566,066	4,208,749	10
43	0.092	5.63E-05	1.12E-06	566,166	4,208,749	10
44	0.085	5.20E-05	1.06E-06	566,266	4,208,749	10
45	0.0788	4.82E-05	1.01E-06	566,366	4,208,749	10
46	0.0733	4.49E-05	9.55E-07	566,466	4,208,749	10
47	0.0685	4.19E-05	8.99E-07	566,566	4,208,749	10
48	0.0641	3.92E-05	8.50E-07	566,666	4,208,749	10
49	0.0602	3.68E-05	8.02E-07	566,766	4,208,749	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
50	0.0318	1.94E-05	8.38E-07	561,966	4,208,649	10
51	0.0338	2.07E-05	8.95E-07	562,066	4,208,649	10
52	0.0362	2.22E-05	9.46E-07	562,166	4,208,649	10
53	0.039	2.38E-05	1.01E-06	562,266	4,208,649	10
54	0.0421	2.58E-05	1.08E-06	562,366	4,208,649	10
55	0.0457	2.79E-05	1.18E-06	562,466	4,208,649	10
56	0.0496	3.03E-05	1.26E-06	562,566	4,208,649	10
57	0.054	3.30E-05	1.38E-06	562,666	4,208,649	10
58	0.0589	3.60E-05	1.47E-06	562,766	4,208,649	10
59	0.0644	3.94E-05	1.59E-06	562,866	4,208,649	10
60	0.0706	4.32E-05	1.70E-06	562,966	4,208,649	10
61	0.0784	4.80E-05	1.80E-06	563,066	4,208,649	10
62	0.0908	5.56E-05	2.01E-06	563,166	4,208,649	10
63	0.102	6.26E-05	2.21E-06	563,266	4,208,649	10
64	0.116	7.07E-05	2.41E-06	563,366	4,208,649	10
65	0.131	8.04E-05	2.66E-06	563,466	4,208,649	10
66	0.149	9.11E-05	2.92E-06	563,566	4,208,649	10
67	0.169	1.04E-04	3.24E-06	563,666	4,208,649	10
68	0.193	1.18E-04	3.61E-06	563,766	4,208,649	10
69	0.221	1.35E-04	4.05E-06	563,866	4,208,649	10
70	0.254	1.55E-04	4.35E-06	563,966	4,208,649	10
71	0.293	1.79E-04	4.88E-06	564,066	4,208,649	10
72	0.345	2.11E-04	5.46E-06	564,166	4,208,649	10
73	0.409	2.51E-04	6.08E-06	564,266	4,208,649	10
74	0.497	3.04E-04	7.06E-06	564,366	4,208,649	10
75	0.617	3.78E-04	7.73E-06	564,466	4,208,649	10
76	0.793	4.85E-04	8.61E-06	564,566	4,208,649	10
77	0.827	5.06E-04	7.61E-06	564,666	4,208,649	10
78	0.934	5.71E-04	6.76E-06	564,766	4,208,649	10
79	0.702	4.29E-04	5.13E-06	564,866	4,208,649	10
80	0.501	3.07E-04	3.98E-06	564,966	4,208,649	10
81	0.385	2.36E-04	3.49E-06	565,066	4,208,649	10
82	0.311	1.90E-04	3.15E-06	565,166	4,208,649	10
83	0.258	1.58E-04	2.74E-06	565,266	4,208,649	10
84	0.219	1.34E-04	2.40E-06	565,366	4,208,649	10
85	0.189	1.16E-04	2.10E-06	565,466	4,208,649	10
86	0.166	1.02E-04	1.89E-06	565,566	4,208,649	10
87	0.147	9.01E-05	1.69E-06	565,666	4,208,649	10
88	0.132	8.06E-05	1.53E-06	565,766	4,208,649	10
89	0.119	7.27E-05	1.40E-06	565,866	4,208,649	10
90	0.108	6.60E-05	1.31E-06	565,966	4,208,649	10
91	0.0985	6.03E-05	1.22E-06	566,066	4,208,649	10
92	0.0904	5.53E-05	1.14E-06	566,166	4,208,649	10
93	0.0834	5.10E-05	1.08E-06	566,266	4,208,649	10
94	0.0773	4.73E-05	1.02E-06	566,366	4,208,649	10
95	0.0718	4.39E-05	9.49E-07	566,466	4,208,649	10
96	0.067	4.10E-05	8.92E-07	566,566	4,208,649	10
97	0.0627	3.84E-05	8.37E-07	566,666	4,208,649	10
98	0.0589	3.60E-05	7.88E-07	566,766	4,208,649	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
99	0.0321	1.97E-05	8.41E-07	561,966	4,208,549	10
100	0.0342	2.09E-05	8.91E-07	562,066	4,208,549	10
101	0.0366	2.24E-05	9.53E-07	562,166	4,208,549	10
102	0.0394	2.41E-05	1.01E-06	562,266	4,208,549	10
103	0.0426	2.61E-05	1.10E-06	562,366	4,208,549	10
104	0.0463	2.83E-05	1.16E-06	562,466	4,208,549	10
105	0.0505	3.09E-05	1.27E-06	562,566	4,208,549	10
106	0.0552	3.38E-05	1.36E-06	562,666	4,208,549	10
107	0.0605	3.70E-05	1.50E-06	562,766	4,208,549	10
108	0.0666	4.07E-05	1.65E-06	562,866	4,208,549	10
109	0.0735	4.50E-05	1.78E-06	562,966	4,208,549	10
110	0.0843	5.16E-05	1.98E-06	563,066	4,208,549	10
111	0.096	5.87E-05	2.19E-06	563,166	4,208,549	10
112	0.108	6.63E-05	2.36E-06	563,266	4,208,549	10
113	0.123	7.55E-05	2.62E-06	563,366	4,208,549	10
114	0.141	8.63E-05	2.89E-06	563,466	4,208,549	10
115	0.162	9.90E-05	3.15E-06	563,566	4,208,549	10
116	0.186	1.14E-04	3.53E-06	563,666	4,208,549	10
117	0.215	1.31E-04	4.01E-06	563,766	4,208,549	10
118	0.249	1.52E-04	4.42E-06	563,866	4,208,549	10
119	0.291	1.78E-04	4.99E-06	563,966	4,208,549	10
120	0.343	2.10E-04	5.65E-06	564,066	4,208,549	10
121	0.411	2.51E-04	6.31E-06	564,166	4,208,549	10
122	0.504	3.08E-04	7.43E-06	564,266	4,208,549	10
123	0.638	3.90E-04	8.47E-06	564,366	4,208,549	10
124	0.864	5.29E-04	1.04E-05	564,466	4,208,549	10
125	1.34	8.22E-04	1.35E-05	564,566	4,208,549	10
126	1.67	1.02E-03	1.09E-05	564,666	4,208,549	10
127	1.31	8.01E-04	7.41E-06	564,766	4,208,549	10
128	0.767	4.69E-04	5.90E-06	564,866	4,208,549	10
129	0.532	3.25E-04	4.91E-06	564,966	4,208,549	10
130	0.393	2.40E-04	3.89E-06	565,066	4,208,549	10
131	0.31	1.90E-04	3.29E-06	565,166	4,208,549	10
132	0.255	1.56E-04	2.80E-06	565,266	4,208,549	10
133	0.216	1.32E-04	2.43E-06	565,366	4,208,549	10
134	0.187	1.14E-04	2.12E-06	565,466	4,208,549	10
135	0.164	1.00E-04	1.89E-06	565,566	4,208,549	10
136	0.145	8.86E-05	1.69E-06	565,666	4,208,549	10
137	0.129	7.92E-05	1.54E-06	565,766	4,208,549	10
138	0.117	7.13E-05	1.42E-06	565,866	4,208,549	10
139	0.106	6.46E-05	1.32E-06	565,966	4,208,549	10
140	0.0964	5.90E-05	1.24E-06	566,066	4,208,549	10
141	0.0884	5.41E-05	1.16E-06	566,166	4,208,549	10
142	0.0815	4.99E-05	1.08E-06	566,266	4,208,549	10
143	0.0754	4.61E-05	1.01E-06	566,366	4,208,549	10
144	0.0701	4.29E-05	9.44E-07	566,466	4,208,549	10
145	0.0654	4.00E-05	8.83E-07	566,566	4,208,549	10
146	0.0612	3.74E-05	8.29E-07	566,666	4,208,549	10
147	0.0575	3.52E-05	7.81E-07	566,766	4,208,549	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
148	0.0325	1.99E-05	8.48E-07	561,966	4,208,449	10
149	0.0346	2.12E-05	9.02E-07	562,066	4,208,449	10
150	0.037	2.27E-05	9.54E-07	562,166	4,208,449	10
151	0.0398	2.44E-05	1.02E-06	562,266	4,208,449	10
152	0.0431	2.64E-05	1.09E-06	562,366	4,208,449	10
153	0.0469	2.87E-05	1.19E-06	562,466	4,208,449	10
154	0.0511	3.13E-05	1.27E-06	562,566	4,208,449	10
155	0.0562	3.44E-05	1.38E-06	562,666	4,208,449	10
156	0.0619	3.79E-05	1.50E-06	562,766	4,208,449	10
157	0.0687	4.21E-05	1.66E-06	562,866	4,208,449	10
158	0.0767	4.70E-05	1.84E-06	562,966	4,208,449	10
159	0.0885	5.41E-05	2.11E-06	563,066	4,208,449	10
160	0.0987	6.04E-05	2.28E-06	563,166	4,208,449	10
161	0.113	6.91E-05	2.50E-06	563,266	4,208,449	10
162	0.131	8.02E-05	2.84E-06	563,366	4,208,449	10
163	0.15	9.16E-05	3.06E-06	563,466	4,208,449	10
164	0.175	1.07E-04	3.48E-06	563,566	4,208,449	10
165	0.205	1.25E-04	3.93E-06	563,666	4,208,449	10
166	0.24	1.47E-04	4.43E-06	563,766	4,208,449	10
167	0.282	1.73E-04	5.07E-06	563,866	4,208,449	10
168	0.335	2.05E-04	5.70E-06	563,966	4,208,449	10
169	0.404	2.47E-04	6.47E-06	564,066	4,208,449	10
170	0.496	3.04E-04	7.65E-06	564,166	4,208,449	10
171	0.627	3.84E-04	8.85E-06	564,266	4,208,449	10
172	0.844	5.16E-04	1.10E-05	564,366	4,208,449	10
173	1.27	7.80E-04	1.52E-05	564,466	4,208,449	10
174	2.55	1.56E-03	2.20E-05	564,566	4,208,449	10
175	1.84	1.13E-03	1.07E-05	564,666	4,208,449	10
176	1.25	7.65E-04	8.21E-06	564,766	4,208,449	10
177	0.709	4.34E-04	6.43E-06	564,866	4,208,449	10
178	0.489	2.99E-04	4.94E-06	564,966	4,208,449	10
179	0.377	2.31E-04	4.04E-06	565,066	4,208,449	10
180	0.3	1.84E-04	3.35E-06	565,166	4,208,449	10
181	0.249	1.52E-04	2.85E-06	565,266	4,208,449	10
182	0.211	1.29E-04	2.44E-06	565,366	4,208,449	10
183	0.183	1.12E-04	2.15E-06	565,466	4,208,449	10
184	0.16	9.79E-05	1.91E-06	565,566	4,208,449	10
185	0.142	8.66E-05	1.72E-06	565,666	4,208,449	10
186	0.126	7.73E-05	1.57E-06	565,766	4,208,449	10
187	0.114	6.96E-05	1.45E-06	565,866	4,208,449	10
188	0.103	6.30E-05	1.34E-06	565,966	4,208,449	10
189	0.0939	5.75E-05	1.25E-06	566,066	4,208,449	10
190	0.086	5.26E-05	1.16E-06	566,166	4,208,449	10
191	0.0792	4.85E-05	1.08E-06	566,266	4,208,449	10
192	0.0733	4.48E-05	1.00E-06	566,366	4,208,449	10
193	0.0681	4.17E-05	9.35E-07	566,466	4,208,449	10
194	0.0635	3.89E-05	8.77E-07	566,566	4,208,449	10
195	0.0595	3.64E-05	8.25E-07	566,666	4,208,449	10
196	0.0559	3.42E-05	7.78E-07	566,766	4,208,449	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
197	0.0328	2.01E-05	8.60E-07	561,966	4,208,349	10
198	0.035	2.14E-05	9.09E-07	562,066	4,208,349	10
199	0.0374	2.29E-05	9.75E-07	562,166	4,208,349	10
200	0.0402	2.46E-05	1.04E-06	562,266	4,208,349	10
201	0.0436	2.67E-05	1.11E-06	562,366	4,208,349	10
202	0.0475	2.91E-05	1.19E-06	562,466	4,208,349	10
203	0.052	3.18E-05	1.30E-06	562,566	4,208,349	10
204	0.0573	3.50E-05	1.42E-06	562,666	4,208,349	10
205	0.0631	3.86E-05	1.53E-06	562,766	4,208,349	10
206	0.0705	4.31E-05	1.67E-06	562,866	4,208,349	10
207	0.0789	4.82E-05	1.85E-06	562,966	4,208,349	10
208	0.0892	5.45E-05	2.08E-06	563,066	4,208,349	10
209	0.102	6.26E-05	2.34E-06	563,166	4,208,349	10
210	0.118	7.24E-05	2.66E-06	563,266	4,208,349	10
211	0.134	8.18E-05	2.88E-06	563,366	4,208,349	10
212	0.16	9.82E-05	3.39E-06	563,466	4,208,349	10
213	0.19	1.16E-04	3.78E-06	563,566	4,208,349	10
214	0.226	1.38E-04	4.32E-06	563,666	4,208,349	10
215	0.269	1.65E-04	4.99E-06	563,766	4,208,349	10
216	0.322	1.97E-04	5.63E-06	563,866	4,208,349	10
217	0.39	2.39E-04	6.47E-06	563,966	4,208,349	10
218	0.48	2.94E-04	7.59E-06	564,066	4,208,349	10
219	0.603	3.69E-04	8.82E-06	564,166	4,208,349	10
220	0.795	4.86E-04	1.10E-05	564,266	4,208,349	10
221	1.15	7.02E-04	1.55E-05	564,366	4,208,349	10
222	2.07	1.27E-03	2.16E-05	564,466	4,208,349	10
223	1.93	1.18E-03	1.28E-05	564,566	4,208,349	10
224	2.32	1.42E-03	1.75E-05	564,666	4,208,349	10
225	0.936	5.73E-04	9.40E-06	564,766	4,208,349	10
226	0.596	3.65E-04	6.17E-06	564,866	4,208,349	10
227	0.434	2.65E-04	4.61E-06	564,966	4,208,349	10
228	0.351	2.15E-04	4.06E-06	565,066	4,208,349	10
229	0.286	1.75E-04	3.39E-06	565,166	4,208,349	10
230	0.24	1.47E-04	2.91E-06	565,266	4,208,349	10
231	0.205	1.25E-04	2.49E-06	565,366	4,208,349	10
232	0.178	1.09E-04	2.20E-06	565,466	4,208,349	10
233	0.156	9.53E-05	1.95E-06	565,566	4,208,349	10
234	0.138	8.43E-05	1.75E-06	565,666	4,208,349	10
235	0.123	7.52E-05	1.60E-06	565,766	4,208,349	10
236	0.11	6.76E-05	1.46E-06	565,866	4,208,349	10
237	0.1	6.12E-05	1.35E-06	565,966	4,208,349	10
238	0.091	5.57E-05	1.24E-06	566,066	4,208,349	10
239	0.0833	5.10E-05	1.14E-06	566,166	4,208,349	10
240	0.0767	4.69E-05	1.06E-06	566,266	4,208,349	10
241	0.0709	4.34E-05	9.84E-07	566,366	4,208,349	10
242	0.0659	4.03E-05	9.20E-07	566,466	4,208,349	10
243	0.0615	3.76E-05	8.66E-07	566,566	4,208,349	10
244	0.0576	3.52E-05	8.13E-07	566,666	4,208,349	10
245	0.0541	3.31E-05	7.66E-07	566,766	4,208,349	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
246	0.033	2.02E-05	8.69E-07	561,966	4,208,249	10
247	0.0353	2.16E-05	9.33E-07	562,066	4,208,249	10
248	0.0378	2.31E-05	9.92E-07	562,166	4,208,249	10
249	0.0406	2.49E-05	1.06E-06	562,266	4,208,249	10
250	0.0439	2.68E-05	1.13E-06	562,366	4,208,249	10
251	0.0481	2.94E-05	1.22E-06	562,466	4,208,249	10
252	0.0528	3.23E-05	1.32E-06	562,566	4,208,249	10
253	0.0581	3.56E-05	1.44E-06	562,666	4,208,249	10
254	0.0642	3.93E-05	1.54E-06	562,766	4,208,249	10
255	0.0716	4.38E-05	1.68E-06	562,866	4,208,249	10
256	0.0804	4.92E-05	1.86E-06	562,966	4,208,249	10
257	0.0911	5.57E-05	2.04E-06	563,066	4,208,249	10
258	0.105	6.40E-05	2.35E-06	563,166	4,208,249	10
259	0.12	7.32E-05	2.62E-06	563,266	4,208,249	10
260	0.143	8.74E-05	3.14E-06	563,366	4,208,249	10
261	0.174	1.06E-04	3.67E-06	563,466	4,208,249	10
262	0.208	1.27E-04	4.22E-06	563,566	4,208,249	10
263	0.247	1.51E-04	4.76E-06	563,666	4,208,249	10
264	0.302	1.84E-04	5.51E-06	563,766	4,208,249	10
265	0.372	2.28E-04	6.44E-06	563,866	4,208,249	10
266	0.461	2.82E-04	7.45E-06	563,966	4,208,249	10
267	0.579	3.55E-04	8.88E-06	564,066	4,208,249	10
268	0.75	4.59E-04	1.08E-05	564,166	4,208,249	10
269	1.04	6.38E-04	1.49E-05	564,266	4,208,249	10
270	1.72	1.05E-03	2.02E-05	564,366	4,208,249	10
271	2.05	1.25E-03	1.56E-05	564,466	4,208,249	10
272	3.74	2.29E-03	2.26E-05	564,566	4,208,249	10
273	1.18	7.21E-04	1.23E-05	564,666	4,208,249	10
274	0.711	4.35E-04	8.27E-06	564,766	4,208,249	10
275	0.506	3.10E-04	5.85E-06	564,866	4,208,249	10
276	0.392	2.40E-04	4.60E-06	564,966	4,208,249	10
277	0.318	1.95E-04	3.88E-06	565,066	4,208,249	10
278	0.268	1.64E-04	3.30E-06	565,166	4,208,249	10
279	0.228	1.39E-04	2.82E-06	565,266	4,208,249	10
280	0.197	1.21E-04	2.47E-06	565,366	4,208,249	10
281	0.172	1.05E-04	2.21E-06	565,466	4,208,249	10
282	0.151	9.22E-05	1.97E-06	565,566	4,208,249	10
283	0.133	8.16E-05	1.78E-06	565,666	4,208,249	10
284	0.119	7.27E-05	1.62E-06	565,766	4,208,249	10
285	0.107	6.53E-05	1.48E-06	565,866	4,208,249	10
286	0.0966	5.91E-05	1.35E-06	565,966	4,208,249	10
287	0.0879	5.38E-05	1.24E-06	566,066	4,208,249	10
288	0.0804	4.92E-05	1.14E-06	566,166	4,208,249	10
289	0.074	4.53E-05	1.06E-06	566,266	4,208,249	10
290	0.0685	4.19E-05	9.81E-07	566,366	4,208,249	10
291	0.0637	3.90E-05	9.16E-07	566,466	4,208,249	10
292	0.0594	3.64E-05	8.59E-07	566,566	4,208,249	10
293	0.0557	3.41E-05	8.04E-07	566,666	4,208,249	10
294	0.0524	3.20E-05	7.55E-07	566,766	4,208,249	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
295	0.033	2.02E-05	8.68E-07	561,966	4,208,149	10
296	0.0354	2.16E-05	9.36E-07	562,066	4,208,149	10
297	0.038	2.32E-05	1.01E-06	562,166	4,208,149	10
298	0.0409	2.50E-05	1.08E-06	562,266	4,208,149	10
299	0.0446	2.73E-05	1.17E-06	562,366	4,208,149	10
300	0.0495	3.03E-05	1.30E-06	562,466	4,208,149	10
301	0.054	3.31E-05	1.39E-06	562,566	4,208,149	10
302	0.0599	3.66E-05	1.50E-06	562,666	4,208,149	10
303	0.065	3.98E-05	1.59E-06	562,766	4,208,149	10
304	0.0725	4.43E-05	1.73E-06	562,866	4,208,149	10
305	0.0817	5.00E-05	1.86E-06	562,966	4,208,149	10
306	0.0928	5.68E-05	2.09E-06	563,066	4,208,149	10
307	0.107	6.56E-05	2.33E-06	563,166	4,208,149	10
308	0.125	7.66E-05	2.70E-06	563,266	4,208,149	10
309	0.153	9.35E-05	3.24E-06	563,366	4,208,149	10
310	0.186	1.14E-04	3.97E-06	563,466	4,208,149	10
311	0.223	1.37E-04	4.54E-06	563,566	4,208,149	10
312	0.264	1.61E-04	5.05E-06	563,666	4,208,149	10
313	0.336	2.05E-04	6.10E-06	563,766	4,208,149	10
314	0.433	2.65E-04	7.34E-06	563,866	4,208,149	10
315	0.563	3.45E-04	8.97E-06	563,966	4,208,149	10
316	0.723	4.43E-04	1.07E-05	564,066	4,208,149	10
317	0.971	5.94E-04	1.40E-05	564,166	4,208,149	10
318	1.48	9.06E-04	1.81E-05	564,266	4,208,149	10
319	3.29	2.01E-03	2.89E-05	564,366	4,208,149	10
320	4.08	2.49E-03	3.20E-05	564,466	4,208,149	10
321	1.44	8.78E-04	1.46E-05	564,566	4,208,149	10
322	0.838	5.13E-04	9.93E-06	564,666	4,208,149	10
323	0.591	3.62E-04	7.31E-06	564,766	4,208,149	10
324	0.452	2.77E-04	5.78E-06	564,866	4,208,149	10
325	0.362	2.21E-04	4.61E-06	564,966	4,208,149	10
326	0.297	1.82E-04	3.79E-06	565,066	4,208,149	10
327	0.252	1.54E-04	3.19E-06	565,166	4,208,149	10
328	0.217	1.33E-04	2.78E-06	565,266	4,208,149	10
329	0.19	1.16E-04	2.50E-06	565,366	4,208,149	10
330	0.165	1.01E-04	2.22E-06	565,466	4,208,149	10
331	0.145	8.86E-05	1.97E-06	565,566	4,208,149	10
332	0.128	7.83E-05	1.76E-06	565,666	4,208,149	10
333	0.114	6.98E-05	1.60E-06	565,766	4,208,149	10
334	0.102	6.27E-05	1.46E-06	565,866	4,208,149	10
335	0.0926	5.67E-05	1.34E-06	565,966	4,208,149	10
336	0.0843	5.16E-05	1.23E-06	566,066	4,208,149	10
337	0.0772	4.73E-05	1.14E-06	566,166	4,208,149	10
338	0.0711	4.35E-05	1.05E-06	566,266	4,208,149	10
339	0.0659	4.03E-05	9.82E-07	566,366	4,208,149	10
340	0.0613	3.75E-05	9.17E-07	566,466	4,208,149	10
341	0.0573	3.51E-05	8.54E-07	566,566	4,208,149	10
342	0.0538	3.29E-05	8.00E-07	566,666	4,208,149	10
343	0.0506	3.10E-05	7.51E-07	566,766	4,208,149	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
344	0.0329	2.01E-05	8.53E-07	561,966	4,208,049	10
345	0.0353	2.16E-05	9.22E-07	562,066	4,208,049	10
346	0.0379	2.32E-05	1.00E-06	562,166	4,208,049	10
347	0.0411	2.51E-05	1.10E-06	562,266	4,208,049	10
348	0.0455	2.79E-05	1.23E-06	562,366	4,208,049	10
349	0.0499	3.05E-05	1.34E-06	562,466	4,208,049	10
350	0.0544	3.33E-05	1.44E-06	562,566	4,208,049	10
351	0.0604	3.70E-05	1.57E-06	562,666	4,208,049	10
352	0.0657	4.02E-05	1.67E-06	562,766	4,208,049	10
353	0.0734	4.49E-05	1.79E-06	562,866	4,208,049	10
354	0.0827	5.06E-05	1.97E-06	562,966	4,208,049	10
355	0.0947	5.80E-05	2.14E-06	563,066	4,208,049	10
356	0.109	6.69E-05	2.39E-06	563,166	4,208,049	10
357	0.128	7.82E-05	2.65E-06	563,266	4,208,049	10
358	0.153	9.36E-05	3.14E-06	563,366	4,208,049	10
359	0.185	1.13E-04	3.75E-06	563,466	4,208,049	10
360	0.227	1.39E-04	4.62E-06	563,566	4,208,049	10
361	0.286	1.75E-04	5.62E-06	563,666	4,208,049	10
362	0.37	2.26E-04	6.60E-06	563,766	4,208,049	10
363	0.53	3.24E-04	8.63E-06	563,866	4,208,049	10
364	0.716	4.38E-04	1.05E-05	563,966	4,208,049	10
365	0.953	5.83E-04	1.39E-05	564,066	4,208,049	10
366	1.35	8.25E-04	1.69E-05	564,166	4,208,049	10
367	2.51	1.54E-03	2.52E-05	564,266	4,208,049	10
368	1.56	9.55E-04	1.27E-05	564,366	4,208,049	10
369	1.81	1.11E-03	1.75E-05	564,466	4,208,049	10
370	0.976	5.97E-04	1.11E-05	564,566	4,208,049	10
371	0.672	4.11E-04	8.15E-06	564,666	4,208,049	10
372	0.513	3.14E-04	6.71E-06	564,766	4,208,049	10
373	0.412	2.52E-04	5.57E-06	564,866	4,208,049	10
374	0.34	2.08E-04	4.45E-06	564,966	4,208,049	10
375	0.284	1.73E-04	3.71E-06	565,066	4,208,049	10
376	0.242	1.48E-04	3.17E-06	565,166	4,208,049	10
377	0.209	1.28E-04	2.77E-06	565,266	4,208,049	10
378	0.181	1.11E-04	2.46E-06	565,366	4,208,049	10
379	0.158	9.65E-05	2.18E-06	565,466	4,208,049	10
380	0.138	8.46E-05	1.94E-06	565,566	4,208,049	10
381	0.122	7.47E-05	1.74E-06	565,666	4,208,049	10
382	0.109	6.64E-05	1.58E-06	565,766	4,208,049	10
383	0.0974	5.96E-05	1.44E-06	565,866	4,208,049	10
384	0.0881	5.39E-05	1.31E-06	565,966	4,208,049	10
385	0.0803	4.91E-05	1.19E-06	566,066	4,208,049	10
386	0.0737	4.51E-05	1.11E-06	566,166	4,208,049	10
387	0.068	4.16E-05	1.04E-06	566,266	4,208,049	10
388	0.0631	3.86E-05	9.64E-07	566,366	4,208,049	10
389	0.0588	3.60E-05	9.01E-07	566,466	4,208,049	10
390	0.0551	3.37E-05	8.41E-07	566,566	4,208,049	10
391	0.0517	3.17E-05	7.88E-07	566,666	4,208,049	10
392	0.0488	2.98E-05	7.40E-07	566,766	4,208,049	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
393	0.0325	1.99E-05	8.35E-07	561,966	4,207,949	10
394	0.0349	2.13E-05	9.03E-07	562,066	4,207,949	10
395	0.0376	2.30E-05	9.85E-07	562,166	4,207,949	10
396	0.041	2.51E-05	1.10E-06	562,266	4,207,949	10
397	0.0448	2.74E-05	1.21E-06	562,366	4,207,949	10
398	0.0498	3.05E-05	1.35E-06	562,466	4,207,949	10
399	0.0547	3.35E-05	1.48E-06	562,566	4,207,949	10
400	0.0605	3.70E-05	1.63E-06	562,666	4,207,949	10
401	0.0662	4.05E-05	1.71E-06	562,766	4,207,949	10
402	0.0736	4.50E-05	1.88E-06	562,866	4,207,949	10
403	0.0837	5.12E-05	2.06E-06	562,966	4,207,949	10
404	0.0961	5.88E-05	2.28E-06	563,066	4,207,949	10
405	0.112	6.82E-05	2.54E-06	563,166	4,207,949	10
406	0.131	8.04E-05	2.89E-06	563,266	4,207,949	10
407	0.159	9.70E-05	3.27E-06	563,366	4,207,949	10
408	0.194	1.18E-04	3.94E-06	563,466	4,207,949	10
409	0.241	1.48E-04	4.65E-06	563,566	4,207,949	10
410	0.315	1.92E-04	6.07E-06	563,666	4,207,949	10
411	0.446	2.73E-04	7.91E-06	563,766	4,207,949	10
412	0.802	4.90E-04	1.08E-05	563,866	4,207,949	10
413	1.11	6.82E-04	1.38E-05	563,966	4,207,949	10
414	1.32	8.07E-04	1.61E-05	564,066	4,207,949	10
415	1.79	1.10E-03	1.81E-05	564,166	4,207,949	10
416	1.72	1.05E-03	1.58E-05	564,266	4,207,949	10
417	2.41	1.48E-03	2.14E-05	564,366	4,207,949	10
418	1.17	7.18E-04	1.26E-05	564,466	4,207,949	10
419	0.783	4.79E-04	9.33E-06	564,566	4,207,949	10
420	0.591	3.61E-04	7.70E-06	564,666	4,207,949	10
421	0.472	2.88E-04	6.26E-06	564,766	4,207,949	10
422	0.39	2.38E-04	5.29E-06	564,866	4,207,949	10
423	0.328	2.01E-04	4.42E-06	564,966	4,207,949	10
424	0.277	1.70E-04	3.68E-06	565,066	4,207,949	10
425	0.237	1.45E-04	3.17E-06	565,166	4,207,949	10
426	0.204	1.25E-04	2.77E-06	565,266	4,207,949	10
427	0.175	1.07E-04	2.42E-06	565,366	4,207,949	10
428	0.151	9.22E-05	2.11E-06	565,466	4,207,949	10
429	0.131	8.04E-05	1.88E-06	565,566	4,207,949	10
430	0.115	7.06E-05	1.72E-06	565,666	4,207,949	10
431	0.102	6.26E-05	1.55E-06	565,766	4,207,949	10
432	0.0918	5.62E-05	1.39E-06	565,866	4,207,949	10
433	0.0831	5.08E-05	1.28E-06	565,966	4,207,949	10
434	0.0759	4.64E-05	1.18E-06	566,066	4,207,949	10
435	0.0697	4.26E-05	1.09E-06	566,166	4,207,949	10
436	0.0645	3.95E-05	1.01E-06	566,266	4,207,949	10
437	0.06	3.67E-05	9.34E-07	566,366	4,207,949	10
438	0.0561	3.43E-05	8.69E-07	566,466	4,207,949	10
439	0.0526	3.22E-05	8.15E-07	566,566	4,207,949	10
440	0.0496	3.03E-05	7.68E-07	566,666	4,207,949	10
441	0.0469	2.87E-05	7.23E-07	566,766	4,207,949	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
442	0.0319	1.95E-05	8.29E-07	561,966	4,207,849	10
443	0.0343	2.10E-05	8.93E-07	562,066	4,207,849	10
444	0.037	2.26E-05	9.73E-07	562,166	4,207,849	10
445	0.0408	2.49E-05	1.09E-06	562,266	4,207,849	10
446	0.0447	2.73E-05	1.20E-06	562,366	4,207,849	10
447	0.049	3.00E-05	1.34E-06	562,466	4,207,849	10
448	0.0541	3.31E-05	1.49E-06	562,566	4,207,849	10
449	0.0596	3.65E-05	1.61E-06	562,666	4,207,849	10
450	0.065	3.98E-05	1.74E-06	562,766	4,207,849	10
451	0.0731	4.47E-05	1.91E-06	562,866	4,207,849	10
452	0.0835	5.11E-05	2.15E-06	562,966	4,207,849	10
453	0.0966	5.91E-05	2.42E-06	563,066	4,207,849	10
454	0.113	6.92E-05	2.76E-06	563,166	4,207,849	10
455	0.135	8.28E-05	3.14E-06	563,266	4,207,849	10
456	0.164	1.00E-04	3.71E-06	563,366	4,207,849	10
457	0.203	1.24E-04	4.36E-06	563,466	4,207,849	10
458	0.26	1.59E-04	5.23E-06	563,566	4,207,849	10
459	0.342	2.09E-04	6.50E-06	563,666	4,207,849	10
460	0.517	3.16E-04	8.13E-06	563,766	4,207,849	10
461	0.569	3.48E-04	9.52E-06	563,866	4,207,849	10
462	1.7	1.04E-03	1.64E-05	563,966	4,207,849	10
463	2.1	1.29E-03	1.81E-05	564,066	4,207,849	10
464	2.42	1.48E-03	2.09E-05	564,166	4,207,849	10
465	3.27	2.00E-03	2.24E-05	564,266	4,207,849	10
466	1.41	8.60E-04	1.32E-05	564,366	4,207,849	10
467	0.972	5.95E-04	1.09E-05	564,466	4,207,849	10
468	0.716	4.38E-04	8.95E-06	564,566	4,207,849	10
469	0.569	3.48E-04	7.25E-06	564,666	4,207,849	10
470	0.466	2.85E-04	6.04E-06	564,766	4,207,849	10
471	0.391	2.39E-04	5.24E-06	564,866	4,207,849	10
472	0.331	2.03E-04	4.35E-06	564,966	4,207,849	10
473	0.281	1.72E-04	3.78E-06	565,066	4,207,849	10
474	0.238	1.45E-04	3.12E-06	565,166	4,207,849	10
475	0.201	1.23E-04	2.74E-06	565,266	4,207,849	10
476	0.169	1.03E-04	2.34E-06	565,366	4,207,849	10
477	0.144	8.79E-05	2.07E-06	565,466	4,207,849	10
478	0.124	7.57E-05	1.88E-06	565,566	4,207,849	10
479	0.108	6.62E-05	1.67E-06	565,666	4,207,849	10
480	0.0958	5.86E-05	1.49E-06	565,766	4,207,849	10
481	0.0859	5.26E-05	1.37E-06	565,866	4,207,849	10
482	0.0779	4.77E-05	1.26E-06	565,966	4,207,849	10
483	0.0712	4.36E-05	1.15E-06	566,066	4,207,849	10
484	0.0656	4.01E-05	1.06E-06	566,166	4,207,849	10
485	0.0609	3.72E-05	9.81E-07	566,266	4,207,849	10
486	0.0568	3.48E-05	9.11E-07	566,366	4,207,849	10
487	0.0532	3.26E-05	8.48E-07	566,466	4,207,849	10
488	0.0501	3.07E-05	7.93E-07	566,566	4,207,849	10
489	0.0473	2.90E-05	7.43E-07	566,666	4,207,849	10
490	0.0448	2.74E-05	6.95E-07	566,766	4,207,849	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
491	0.0312	1.91E-05	8.35E-07	561,966	4,207,749	10
492	0.0334	2.04E-05	8.94E-07	562,066	4,207,749	10
493	0.0359	2.20E-05	9.57E-07	562,166	4,207,749	10
494	0.0391	2.39E-05	1.04E-06	562,266	4,207,749	10
495	0.0431	2.64E-05	1.16E-06	562,366	4,207,749	10
496	0.0473	2.89E-05	1.29E-06	562,466	4,207,749	10
497	0.0522	3.20E-05	1.42E-06	562,566	4,207,749	10
498	0.0586	3.59E-05	1.64E-06	562,666	4,207,749	10
499	0.0655	4.00E-05	1.82E-06	562,766	4,207,749	10
500	0.0745	4.56E-05	2.06E-06	562,866	4,207,749	10
501	0.0835	5.11E-05	2.27E-06	562,966	4,207,749	10
502	0.0955	5.84E-05	2.54E-06	563,066	4,207,749	10
503	0.113	6.94E-05	2.93E-06	563,166	4,207,749	10
504	0.136	8.33E-05	3.42E-06	563,266	4,207,749	10
505	0.167	1.02E-04	3.94E-06	563,366	4,207,749	10
506	0.211	1.29E-04	4.74E-06	563,466	4,207,749	10
507	0.269	1.65E-04	5.68E-06	563,566	4,207,749	10
508	0.354	2.16E-04	7.10E-06	563,666	4,207,749	10
509	0.47	2.88E-04	9.17E-06	563,766	4,207,749	10
510	0.669	4.09E-04	1.11E-05	563,866	4,207,749	10
511	1.25	7.67E-04	1.59E-05	563,966	4,207,749	10
512	2.65	1.62E-03	2.36E-05	564,066	4,207,749	10
513	4.91	3.00E-03	2.77E-05	564,166	4,207,749	10
514	2.57	1.57E-03	1.88E-05	564,266	4,207,749	10
515	1.08	6.59E-04	9.95E-06	564,366	4,207,749	10
516	0.952	5.83E-04	9.60E-06	564,466	4,207,749	10
517	0.766	4.69E-04	8.29E-06	564,566	4,207,749	10
518	0.62	3.79E-04	7.32E-06	564,666	4,207,749	10
519	0.511	3.13E-04	6.14E-06	564,766	4,207,749	10
520	0.425	2.60E-04	5.25E-06	564,866	4,207,749	10
521	0.358	2.19E-04	4.56E-06	564,966	4,207,749	10
522	0.297	1.82E-04	3.73E-06	565,066	4,207,749	10
523	0.247	1.51E-04	3.23E-06	565,166	4,207,749	10
524	0.201	1.23E-04	2.67E-06	565,266	4,207,749	10
525	0.163	9.97E-05	2.32E-06	565,366	4,207,749	10
526	0.135	8.29E-05	2.04E-06	565,466	4,207,749	10
527	0.115	7.05E-05	1.80E-06	565,566	4,207,749	10
528	0.1	6.13E-05	1.61E-06	565,666	4,207,749	10
529	0.0888	5.43E-05	1.45E-06	565,766	4,207,749	10
530	0.0797	4.88E-05	1.33E-06	565,866	4,207,749	10
531	0.0724	4.43E-05	1.21E-06	565,966	4,207,749	10
532	0.0665	4.07E-05	1.11E-06	566,066	4,207,749	10
533	0.0615	3.76E-05	1.03E-06	566,166	4,207,749	10
534	0.0572	3.50E-05	9.49E-07	566,266	4,207,749	10
535	0.0535	3.28E-05	8.79E-07	566,366	4,207,749	10
536	0.0503	3.08E-05	8.22E-07	566,466	4,207,749	10
537	0.0475	2.90E-05	7.71E-07	566,566	4,207,749	10
538	0.045	2.75E-05	7.24E-07	566,666	4,207,749	10
539	0.0427	2.61E-05	6.85E-07	566,766	4,207,749	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
540	0.0301	1.84E-05	8.34E-07	561,966	4,207,649	10
541	0.0322	1.97E-05	8.85E-07	562,066	4,207,649	10
542	0.0346	2.12E-05	9.43E-07	562,166	4,207,649	10
543	0.0374	2.29E-05	1.02E-06	562,266	4,207,649	10
544	0.0405	2.48E-05	1.10E-06	562,366	4,207,649	10
545	0.0452	2.77E-05	1.23E-06	562,466	4,207,649	10
546	0.0501	3.07E-05	1.40E-06	562,566	4,207,649	10
547	0.0562	3.44E-05	1.61E-06	562,666	4,207,649	10
548	0.0633	3.87E-05	1.83E-06	562,766	4,207,649	10
549	0.0717	4.39E-05	2.10E-06	562,866	4,207,649	10
550	0.0829	5.07E-05	2.41E-06	562,966	4,207,649	10
551	0.0945	5.78E-05	2.69E-06	563,066	4,207,649	10
552	0.111	6.79E-05	3.07E-06	563,166	4,207,649	10
553	0.137	8.40E-05	3.61E-06	563,266	4,207,649	10
554	0.177	1.08E-04	4.46E-06	563,366	4,207,649	10
555	0.217	1.33E-04	5.16E-06	563,466	4,207,649	10
556	0.283	1.73E-04	6.17E-06	563,566	4,207,649	10
557	0.376	2.30E-04	7.49E-06	563,666	4,207,649	10
558	0.516	3.16E-04	9.05E-06	563,766	4,207,649	10
559	0.75	4.59E-04	1.13E-05	563,866	4,207,649	10
560	1.11	6.78E-04	1.41E-05	563,966	4,207,649	10
561	5.25	3.21E-03	3.19E-05	564,066	4,207,649	10
562	1.83	1.12E-03	2.13E-05	564,166	4,207,649	10
563	1.25	7.63E-04	1.41E-05	564,266	4,207,649	10
564	0.693	4.24E-04	9.51E-06	564,366	4,207,649	10
565	1.21	7.39E-04	1.16E-05	564,466	4,207,649	10
566	1.09	6.67E-04	8.67E-06	564,566	4,207,649	10
567	0.787	4.81E-04	8.03E-06	564,666	4,207,649	10
568	0.681	4.17E-04	6.94E-06	564,766	4,207,649	10
569	0.522	3.20E-04	5.82E-06	564,866	4,207,649	10
570	0.431	2.64E-04	4.93E-06	564,966	4,207,649	10
571	0.341	2.08E-04	4.04E-06	565,066	4,207,649	10
572	0.266	1.63E-04	3.22E-06	565,166	4,207,649	10
573	0.2	1.22E-04	2.67E-06	565,266	4,207,649	10
574	0.154	9.45E-05	2.26E-06	565,366	4,207,649	10
575	0.125	7.66E-05	1.99E-06	565,466	4,207,649	10
576	0.106	6.46E-05	1.73E-06	565,566	4,207,649	10
577	0.0919	5.62E-05	1.56E-06	565,666	4,207,649	10
578	0.0816	4.99E-05	1.41E-06	565,766	4,207,649	10
579	0.0735	4.50E-05	1.27E-06	565,866	4,207,649	10
580	0.0671	4.10E-05	1.16E-06	565,966	4,207,649	10
581	0.0618	3.78E-05	1.06E-06	566,066	4,207,649	10
582	0.0574	3.51E-05	9.82E-07	566,166	4,207,649	10
583	0.0536	3.28E-05	9.17E-07	566,266	4,207,649	10
584	0.0503	3.08E-05	8.60E-07	566,366	4,207,649	10
585	0.0474	2.90E-05	8.03E-07	566,466	4,207,649	10
586	0.0449	2.75E-05	7.47E-07	566,566	4,207,649	10
587	0.0426	2.61E-05	7.07E-07	566,666	4,207,649	10
588	0.0405	2.48E-05	6.69E-07	566,766	4,207,649	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
589	0.029	1.77E-05	8.32E-07	561,966	4,207,549	10
590	0.0308	1.89E-05	8.82E-07	562,066	4,207,549	10
591	0.033	2.02E-05	9.44E-07	562,166	4,207,549	10
592	0.0356	2.18E-05	1.02E-06	562,266	4,207,549	10
593	0.0386	2.36E-05	1.12E-06	562,366	4,207,549	10
594	0.043	2.63E-05	1.27E-06	562,466	4,207,549	10
595	0.0476	2.91E-05	1.42E-06	562,566	4,207,549	10
596	0.053	3.24E-05	1.58E-06	562,666	4,207,549	10
597	0.0598	3.66E-05	1.84E-06	562,766	4,207,549	10
598	0.0683	4.18E-05	2.13E-06	562,866	4,207,549	10
599	0.0793	4.85E-05	2.48E-06	562,966	4,207,549	10
600	0.0931	5.69E-05	2.87E-06	563,066	4,207,549	10
601	0.107	6.54E-05	3.19E-06	563,166	4,207,549	10
602	0.14	8.59E-05	4.01E-06	563,266	4,207,549	10
603	0.181	1.11E-04	4.76E-06	563,366	4,207,549	10
604	0.232	1.42E-04	5.44E-06	563,466	4,207,549	10
605	0.314	1.92E-04	6.79E-06	563,566	4,207,549	10
606	0.473	2.90E-04	9.33E-06	563,666	4,207,549	10
607	0.696	4.26E-04	1.07E-05	563,766	4,207,549	10
608	1	6.13E-04	1.29E-05	563,866	4,207,549	10
609	2.35	1.44E-03	2.19E-05	563,966	4,207,549	10
610	1.62	9.92E-04	1.58E-05	564,066	4,207,549	10
611	0.946	5.79E-04	1.26E-05	564,166	4,207,549	10
612	0.565	3.46E-04	8.81E-06	564,266	4,207,549	10
613	0.478	2.92E-04	7.96E-06	564,366	4,207,549	10
614	0.46	2.81E-04	7.17E-06	564,466	4,207,549	10
615	0.448	2.74E-04	6.40E-06	564,566	4,207,549	10
616	0.41	2.51E-04	6.20E-06	564,666	4,207,549	10
617	1.1	6.72E-04	8.86E-06	564,766	4,207,549	10
618	0.932	5.71E-04	7.30E-06	564,866	4,207,549	10
619	0.612	3.75E-04	5.80E-06	564,966	4,207,549	10
620	0.46	2.82E-04	4.54E-06	565,066	4,207,549	10
621	0.298	1.82E-04	3.44E-06	565,166	4,207,549	10
622	0.193	1.18E-04	2.60E-06	565,266	4,207,549	10
623	0.141	8.62E-05	2.23E-06	565,366	4,207,549	10
624	0.113	6.90E-05	1.91E-06	565,466	4,207,549	10
625	0.0952	5.82E-05	1.67E-06	565,566	4,207,549	10
626	0.0832	5.09E-05	1.48E-06	565,666	4,207,549	10
627	0.0743	4.55E-05	1.33E-06	565,766	4,207,549	10
628	0.0674	4.12E-05	1.22E-06	565,866	4,207,549	10
629	0.0619	3.78E-05	1.12E-06	565,966	4,207,549	10
630	0.0573	3.51E-05	1.03E-06	566,066	4,207,549	10
631	0.0534	3.27E-05	9.57E-07	566,166	4,207,549	10
632	0.0501	3.07E-05	8.92E-07	566,266	4,207,549	10
633	0.0472	2.89E-05	8.33E-07	566,366	4,207,549	10
634	0.0446	2.73E-05	7.76E-07	566,466	4,207,549	10
635	0.0423	2.59E-05	7.34E-07	566,566	4,207,549	10
636	0.0403	2.46E-05	6.93E-07	566,666	4,207,549	10
637	0.0384	2.35E-05	6.52E-07	566,766	4,207,549	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
638	0.0275	1.68E-05	8.38E-07	561,966	4,207,449	10
639	0.0292	1.79E-05	8.96E-07	562,066	4,207,449	10
640	0.0312	1.91E-05	9.66E-07	562,166	4,207,449	10
641	0.0334	2.05E-05	1.05E-06	562,266	4,207,449	10
642	0.0362	2.22E-05	1.15E-06	562,366	4,207,449	10
643	0.0399	2.44E-05	1.29E-06	562,466	4,207,449	10
644	0.0443	2.71E-05	1.44E-06	562,566	4,207,449	10
645	0.0492	3.01E-05	1.62E-06	562,666	4,207,449	10
646	0.0554	3.39E-05	1.84E-06	562,766	4,207,449	10
647	0.0634	3.88E-05	2.10E-06	562,866	4,207,449	10
648	0.0739	4.52E-05	2.50E-06	562,966	4,207,449	10
649	0.088	5.38E-05	2.96E-06	563,066	4,207,449	10
650	0.103	6.32E-05	3.29E-06	563,166	4,207,449	10
651	0.136	8.33E-05	4.07E-06	563,266	4,207,449	10
652	0.181	1.11E-04	4.92E-06	563,366	4,207,449	10
653	0.248	1.51E-04	5.93E-06	563,466	4,207,449	10
654	0.368	2.25E-04	7.86E-06	563,566	4,207,449	10
655	0.593	3.63E-04	1.02E-05	563,666	4,207,449	10
656	1.08	6.62E-04	1.53E-05	563,766	4,207,449	10
657	3.19	1.95E-03	2.11E-05	563,866	4,207,449	10
658	1.89	1.16E-03	1.27E-05	563,966	4,207,449	10
659	0.89	5.44E-04	9.93E-06	564,066	4,207,449	10
660	0.574	3.51E-04	8.85E-06	564,166	4,207,449	10
661	0.403	2.47E-04	7.81E-06	564,266	4,207,449	10
662	0.319	1.95E-04	6.97E-06	564,366	4,207,449	10
663	0.283	1.73E-04	6.41E-06	564,466	4,207,449	10
664	0.28	1.71E-04	6.55E-06	564,566	4,207,449	10
665	0.286	1.75E-04	6.13E-06	564,666	4,207,449	10
666	0.547	3.35E-04	7.00E-06	564,766	4,207,449	10
667	0.291	1.78E-04	4.61E-06	564,866	4,207,449	10
668	1.02	6.23E-04	8.09E-06	564,966	4,207,449	10
669	0.948	5.80E-04	5.93E-06	565,066	4,207,449	10
670	0.297	1.82E-04	3.58E-06	565,166	4,207,449	10
671	0.167	1.02E-04	2.58E-06	565,266	4,207,449	10
672	0.121	7.41E-05	2.06E-06	565,366	4,207,449	10
673	0.0983	6.02E-05	1.79E-06	565,466	4,207,449	10
674	0.0843	5.16E-05	1.59E-06	565,566	4,207,449	10
675	0.0746	4.56E-05	1.42E-06	565,666	4,207,449	10
676	0.0673	4.12E-05	1.29E-06	565,766	4,207,449	10
677	0.0615	3.77E-05	1.18E-06	565,866	4,207,449	10
678	0.0569	3.48E-05	1.09E-06	565,966	4,207,449	10
679	0.053	3.24E-05	1.01E-06	566,066	4,207,449	10
680	0.0496	3.04E-05	9.38E-07	566,166	4,207,449	10
681	0.0467	2.86E-05	8.75E-07	566,266	4,207,449	10
682	0.0442	2.70E-05	8.15E-07	566,366	4,207,449	10
683	0.0419	2.56E-05	7.67E-07	566,466	4,207,449	10
684	0.0399	2.44E-05	7.28E-07	566,566	4,207,449	10
685	0.038	2.33E-05	6.86E-07	566,666	4,207,449	10
686	0.0364	2.22E-05	6.46E-07	566,766	4,207,449	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
687	0.0258	1.58E-05	8.47E-07	561,966	4,207,349	10
688	0.0273	1.67E-05	9.13E-07	562,066	4,207,349	10
689	0.029	1.78E-05	9.92E-07	562,166	4,207,349	10
690	0.0311	1.90E-05	1.08E-06	562,266	4,207,349	10
691	0.0336	2.05E-05	1.19E-06	562,366	4,207,349	10
692	0.0365	2.23E-05	1.32E-06	562,466	4,207,349	10
693	0.0404	2.47E-05	1.49E-06	562,566	4,207,349	10
694	0.045	2.75E-05	1.68E-06	562,666	4,207,349	10
695	0.0504	3.09E-05	1.87E-06	562,766	4,207,349	10
696	0.0575	3.52E-05	2.12E-06	562,866	4,207,349	10
697	0.0671	4.10E-05	2.43E-06	562,966	4,207,349	10
698	0.0804	4.92E-05	2.82E-06	563,066	4,207,349	10
699	0.0985	6.03E-05	3.33E-06	563,166	4,207,349	10
700	0.129	7.90E-05	4.09E-06	563,266	4,207,349	10
701	0.18	1.10E-04	5.11E-06	563,366	4,207,349	10
702	0.26	1.59E-04	6.33E-06	563,466	4,207,349	10
703	0.426	2.61E-04	8.11E-06	563,566	4,207,349	10
704	0.774	4.73E-04	1.28E-05	563,666	4,207,349	10
705	2.03	1.24E-03	2.06E-05	563,766	4,207,349	10
706	1.77	1.08E-03	1.05E-05	563,866	4,207,349	10
707	1.33	8.12E-04	1.33E-05	563,966	4,207,349	10
708	0.615	3.76E-04	9.50E-06	564,066	4,207,349	10
709	0.386	2.36E-04	7.39E-06	564,166	4,207,349	10
710	0.279	1.70E-04	6.14E-06	564,266	4,207,349	10
711	0.222	1.36E-04	5.43E-06	564,366	4,207,349	10
712	0.19	1.16E-04	4.94E-06	564,466	4,207,349	10
713	0.173	1.06E-04	4.64E-06	564,566	4,207,349	10
714	0.169	1.03E-04	4.85E-06	564,666	4,207,349	10
715	0.175	1.07E-04	4.54E-06	564,766	4,207,349	10
716	0.216	1.32E-04	5.00E-06	564,866	4,207,349	10
717	0.151	9.25E-05	3.10E-06	564,966	4,207,349	10
718	0.42	2.57E-04	4.68E-06	565,066	4,207,349	10
719	0.188	1.15E-04	3.01E-06	565,166	4,207,349	10
720	0.126	7.69E-05	2.33E-06	565,266	4,207,349	10
721	0.099	6.06E-05	1.95E-06	565,366	4,207,349	10
722	0.0838	5.13E-05	1.70E-06	565,466	4,207,349	10
723	0.0737	4.51E-05	1.51E-06	565,566	4,207,349	10
724	0.0663	4.06E-05	1.37E-06	565,666	4,207,349	10
725	0.0606	3.71E-05	1.25E-06	565,766	4,207,349	10
726	0.056	3.43E-05	1.14E-06	565,866	4,207,349	10
727	0.0521	3.19E-05	1.07E-06	565,966	4,207,349	10
728	0.0489	2.99E-05	9.94E-07	566,066	4,207,349	10
729	0.046	2.82E-05	9.27E-07	566,166	4,207,349	10
730	0.0436	2.66E-05	8.61E-07	566,266	4,207,349	10
731	0.0413	2.53E-05	8.06E-07	566,366	4,207,349	10
732	0.0394	2.41E-05	7.64E-07	566,466	4,207,349	10
733	0.0376	2.30E-05	7.19E-07	566,566	4,207,349	10
734	0.0359	2.20E-05	6.75E-07	566,666	4,207,349	10
735	0.0344	2.11E-05	6.44E-07	566,766	4,207,349	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
736	0.0238	1.45E-05	8.55E-07	561,966	4,207,249	10
737	0.0251	1.54E-05	9.24E-07	562,066	4,207,249	10
738	0.0266	1.63E-05	1.01E-06	562,166	4,207,249	10
739	0.0284	1.73E-05	1.11E-06	562,266	4,207,249	10
740	0.0305	1.87E-05	1.23E-06	562,366	4,207,249	10
741	0.0334	2.04E-05	1.38E-06	562,466	4,207,249	10
742	0.0366	2.24E-05	1.56E-06	562,566	4,207,249	10
743	0.0404	2.47E-05	1.73E-06	562,666	4,207,249	10
744	0.045	2.76E-05	1.91E-06	562,766	4,207,249	10
745	0.0511	3.13E-05	2.12E-06	562,866	4,207,249	10
746	0.0593	3.63E-05	2.35E-06	562,966	4,207,249	10
747	0.071	4.34E-05	2.67E-06	563,066	4,207,249	10
748	0.089	5.45E-05	3.14E-06	563,166	4,207,249	10
749	0.119	7.27E-05	4.02E-06	563,266	4,207,249	10
750	0.172	1.05E-04	5.27E-06	563,366	4,207,249	10
751	0.283	1.73E-04	6.54E-06	563,466	4,207,249	10
752	0.524	3.20E-04	1.01E-05	563,566	4,207,249	10
753	1.27	7.75E-04	1.47E-05	563,666	4,207,249	10
754	2.22	1.36E-03	1.32E-05	563,766	4,207,249	10
755	1.22	7.45E-04	9.43E-06	563,866	4,207,249	10
756	0.594	3.63E-04	8.93E-06	563,966	4,207,249	10
757	0.367	2.25E-04	6.85E-06	564,066	4,207,249	10
758	0.255	1.56E-04	5.67E-06	564,166	4,207,249	10
759	0.194	1.19E-04	4.85E-06	564,266	4,207,249	10
760	0.158	9.68E-05	4.31E-06	564,366	4,207,249	10
761	0.136	8.30E-05	3.94E-06	564,466	4,207,249	10
762	0.121	7.41E-05	3.74E-06	564,566	4,207,249	10
763	0.112	6.86E-05	3.55E-06	564,666	4,207,249	10
764	0.106	6.51E-05	3.56E-06	564,766	4,207,249	10
765	0.104	6.36E-05	3.23E-06	564,866	4,207,249	10
766	0.103	6.27E-05	3.00E-06	564,966	4,207,249	10
767	0.109	6.66E-05	2.93E-06	565,066	4,207,249	10
768	0.102	6.23E-05	2.35E-06	565,166	4,207,249	10
769	0.0885	5.41E-05	1.96E-06	565,266	4,207,249	10
770	0.0774	4.74E-05	1.71E-06	565,366	4,207,249	10
771	0.0692	4.24E-05	1.52E-06	565,466	4,207,249	10
772	0.063	3.85E-05	1.38E-06	565,566	4,207,249	10
773	0.0581	3.55E-05	1.27E-06	565,666	4,207,249	10
774	0.054	3.30E-05	1.17E-06	565,766	4,207,249	10
775	0.0505	3.09E-05	1.09E-06	565,866	4,207,249	10
776	0.0475	2.91E-05	1.02E-06	565,966	4,207,249	10
777	0.0449	2.75E-05	9.62E-07	566,066	4,207,249	10
778	0.0425	2.60E-05	9.06E-07	566,166	4,207,249	10
779	0.0405	2.48E-05	8.52E-07	566,266	4,207,249	10
780	0.0386	2.36E-05	8.08E-07	566,366	4,207,249	10
781	0.0369	2.26E-05	7.58E-07	566,466	4,207,249	10
782	0.0354	2.16E-05	7.11E-07	566,566	4,207,249	10
783	0.0339	2.08E-05	6.80E-07	566,666	4,207,249	10
784	0.0326	2.00E-05	6.46E-07	566,766	4,207,249	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
785	0.0216	1.32E-05	8.76E-07	561,966	4,207,149	10
786	0.0227	1.39E-05	9.50E-07	562,066	4,207,149	10
787	0.0239	1.46E-05	1.03E-06	562,166	4,207,149	10
788	0.0253	1.55E-05	1.13E-06	562,266	4,207,149	10
789	0.0271	1.66E-05	1.25E-06	562,366	4,207,149	10
790	0.0291	1.78E-05	1.38E-06	562,466	4,207,149	10
791	0.032	1.96E-05	1.55E-06	562,566	4,207,149	10
792	0.0351	2.15E-05	1.71E-06	562,666	4,207,149	10
793	0.0389	2.38E-05	1.87E-06	562,766	4,207,149	10
794	0.0439	2.68E-05	2.06E-06	562,866	4,207,149	10
795	0.0506	3.10E-05	2.32E-06	562,966	4,207,149	10
796	0.0604	3.69E-05	2.64E-06	563,066	4,207,149	10
797	0.0752	4.60E-05	3.08E-06	563,166	4,207,149	10
798	0.1	6.14E-05	3.68E-06	563,266	4,207,149	10
799	0.15	9.18E-05	4.51E-06	563,366	4,207,149	10
800	0.278	1.70E-04	7.57E-06	563,466	4,207,149	10
801	0.693	4.24E-04	1.12E-05	563,566	4,207,149	10
802	2.65	1.62E-03	2.73E-05	563,666	4,207,149	10
803	2.34	1.43E-03	2.09E-05	563,766	4,207,149	10
804	0.619	3.79E-04	9.34E-06	563,866	4,207,149	10
805	0.317	1.94E-04	6.12E-06	563,966	4,207,149	10
806	0.22	1.34E-04	4.82E-06	564,066	4,207,149	10
807	0.169	1.04E-04	4.37E-06	564,166	4,207,149	10
808	0.136	8.32E-05	3.91E-06	564,266	4,207,149	10
809	0.114	7.00E-05	3.54E-06	564,366	4,207,149	10
810	0.0999	6.11E-05	3.29E-06	564,466	4,207,149	10
811	0.09	5.51E-05	3.09E-06	564,566	4,207,149	10
812	0.083	5.08E-05	2.85E-06	564,666	4,207,149	10
813	0.078	4.77E-05	2.60E-06	564,766	4,207,149	10
814	0.0751	4.60E-05	2.54E-06	564,866	4,207,149	10
815	0.0738	4.52E-05	2.38E-06	564,966	4,207,149	10
816	0.0727	4.45E-05	2.20E-06	565,066	4,207,149	10
817	0.0708	4.33E-05	2.01E-06	565,166	4,207,149	10
818	0.0665	4.07E-05	1.79E-06	565,266	4,207,149	10
819	0.0615	3.77E-05	1.57E-06	565,366	4,207,149	10
820	0.057	3.48E-05	1.42E-06	565,466	4,207,149	10
821	0.0531	3.25E-05	1.28E-06	565,566	4,207,149	10
822	0.0499	3.05E-05	1.19E-06	565,666	4,207,149	10
823	0.0472	2.89E-05	1.10E-06	565,766	4,207,149	10
824	0.0448	2.74E-05	1.02E-06	565,866	4,207,149	10
825	0.0427	2.61E-05	9.51E-07	565,966	4,207,149	10
826	0.0407	2.49E-05	8.94E-07	566,066	4,207,149	10
827	0.0389	2.38E-05	8.50E-07	566,166	4,207,149	10
828	0.0373	2.28E-05	8.18E-07	566,266	4,207,149	10
829	0.0358	2.19E-05	7.78E-07	566,366	4,207,149	10
830	0.0344	2.10E-05	7.35E-07	566,466	4,207,149	10
831	0.0331	2.03E-05	7.04E-07	566,566	4,207,149	10
832	0.0319	1.95E-05	6.70E-07	566,666	4,207,149	10
833	0.0308	1.88E-05	6.36E-07	566,766	4,207,149	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
834	0.0193	1.18E-05	9.08E-07	561,966	4,207,049	10
835	0.0201	1.23E-05	9.76E-07	562,066	4,207,049	10
836	0.021	1.28E-05	1.06E-06	562,166	4,207,049	10
837	0.022	1.34E-05	1.15E-06	562,266	4,207,049	10
838	0.0233	1.42E-05	1.25E-06	562,366	4,207,049	10
839	0.0251	1.53E-05	1.40E-06	562,466	4,207,049	10
840	0.0268	1.64E-05	1.51E-06	562,566	4,207,049	10
841	0.0291	1.78E-05	1.65E-06	562,666	4,207,049	10
842	0.0319	1.95E-05	1.79E-06	562,766	4,207,049	10
843	0.0353	2.16E-05	1.94E-06	562,866	4,207,049	10
844	0.0402	2.46E-05	2.19E-06	562,966	4,207,049	10
845	0.047	2.88E-05	2.48E-06	563,066	4,207,049	10
846	0.0573	3.50E-05	2.92E-06	563,166	4,207,049	10
847	0.0742	4.54E-05	3.50E-06	563,266	4,207,049	10
848	0.107	6.55E-05	4.51E-06	563,366	4,207,049	10
849	0.195	1.19E-04	6.61E-06	563,466	4,207,049	10
850	0.726	4.44E-04	1.24E-05	563,566	4,207,049	10
851	0.0537	3.28E-05	3.87E-06	563,666	4,207,049	10
852	0.603	3.69E-04	9.88E-06	563,766	4,207,049	10
853	0.279	1.71E-04	6.08E-06	563,866	4,207,049	10
854	0.178	1.09E-04	4.39E-06	563,966	4,207,049	10
855	0.137	8.35E-05	3.84E-06	564,066	4,207,049	10
856	0.112	6.84E-05	3.51E-06	564,166	4,207,049	10
857	0.0952	5.83E-05	3.22E-06	564,266	4,207,049	10
858	0.0836	5.12E-05	2.99E-06	564,366	4,207,049	10
859	0.0753	4.60E-05	2.72E-06	564,466	4,207,049	10
860	0.0691	4.23E-05	2.52E-06	564,566	4,207,049	10
861	0.0648	3.96E-05	2.32E-06	564,666	4,207,049	10
862	0.0616	3.77E-05	2.23E-06	564,766	4,207,049	10
863	0.0594	3.63E-05	2.13E-06	564,866	4,207,049	10
864	0.0579	3.55E-05	1.99E-06	564,966	4,207,049	10
865	0.0567	3.47E-05	1.90E-06	565,066	4,207,049	10
866	0.0554	3.39E-05	1.81E-06	565,166	4,207,049	10
867	0.0533	3.26E-05	1.59E-06	565,266	4,207,049	10
868	0.0508	3.11E-05	1.44E-06	565,366	4,207,049	10
869	0.0482	2.95E-05	1.32E-06	565,466	4,207,049	10
870	0.0456	2.79E-05	1.21E-06	565,566	4,207,049	10
871	0.0434	2.65E-05	1.13E-06	565,666	4,207,049	10
872	0.0414	2.53E-05	1.04E-06	565,766	4,207,049	10
873	0.0396	2.42E-05	9.80E-07	565,866	4,207,049	10
874	0.038	2.33E-05	9.22E-07	565,966	4,207,049	10
875	0.0366	2.24E-05	8.58E-07	566,066	4,207,049	10
876	0.0353	2.16E-05	8.05E-07	566,166	4,207,049	10
877	0.034	2.08E-05	7.58E-07	566,266	4,207,049	10
878	0.0329	2.01E-05	7.18E-07	566,366	4,207,049	10
879	0.0318	1.94E-05	6.93E-07	566,466	4,207,049	10
880	0.0307	1.88E-05	6.63E-07	566,566	4,207,049	10
881	0.0298	1.82E-05	6.34E-07	566,666	4,207,049	10
882	0.0289	1.77E-05	6.09E-07	566,766	4,207,049	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
883	0.0169	1.04E-05	9.34E-07	561,966	4,206,949	10
884	0.0174	1.06E-05	9.95E-07	562,066	4,206,949	10
885	0.0179	1.10E-05	1.07E-06	562,166	4,206,949	10
886	0.0186	1.14E-05	1.14E-06	562,266	4,206,949	10
887	0.0195	1.19E-05	1.24E-06	562,366	4,206,949	10
888	0.0205	1.25E-05	1.34E-06	562,466	4,206,949	10
889	0.0216	1.32E-05	1.42E-06	562,566	4,206,949	10
890	0.023	1.41E-05	1.54E-06	562,666	4,206,949	10
891	0.0246	1.50E-05	1.65E-06	562,766	4,206,949	10
892	0.0265	1.62E-05	1.80E-06	562,866	4,206,949	10
893	0.029	1.77E-05	1.98E-06	562,966	4,206,949	10
894	0.0321	1.96E-05	2.23E-06	563,066	4,206,949	10
895	0.0361	2.21E-05	2.57E-06	563,166	4,206,949	10
896	0.0412	2.52E-05	2.91E-06	563,266	4,206,949	10
897	0.0471	2.88E-05	3.74E-06	563,366	4,206,949	10
898	0.0522	3.19E-05	4.43E-06	563,466	4,206,949	10
899	0.0545	3.33E-05	3.55E-06	563,566	4,206,949	10
900	0.11	6.72E-05	5.11E-06	563,666	4,206,949	10
901	0.14	8.57E-05	4.71E-06	563,766	4,206,949	10
902	0.118	7.23E-05	4.01E-06	563,866	4,206,949	10
903	0.0992	6.07E-05	3.48E-06	563,966	4,206,949	10
904	0.0848	5.19E-05	3.14E-06	564,066	4,206,949	10
905	0.0741	4.54E-05	2.84E-06	564,166	4,206,949	10
906	0.0669	4.10E-05	2.65E-06	564,266	4,206,949	10
907	0.0615	3.76E-05	2.39E-06	564,366	4,206,949	10
908	0.0574	3.51E-05	2.25E-06	564,466	4,206,949	10
909	0.0542	3.31E-05	2.12E-06	564,566	4,206,949	10
910	0.0516	3.16E-05	2.03E-06	564,666	4,206,949	10
911	0.0497	3.04E-05	1.94E-06	564,766	4,206,949	10
912	0.0483	2.96E-05	1.82E-06	564,866	4,206,949	10
913	0.0473	2.89E-05	1.72E-06	564,966	4,206,949	10
914	0.0464	2.84E-05	1.69E-06	565,066	4,206,949	10
915	0.0454	2.78E-05	1.58E-06	565,166	4,206,949	10
916	0.0443	2.71E-05	1.46E-06	565,266	4,206,949	10
917	0.0429	2.62E-05	1.33E-06	565,366	4,206,949	10
918	0.0413	2.53E-05	1.21E-06	565,466	4,206,949	10
919	0.0397	2.43E-05	1.13E-06	565,566	4,206,949	10
920	0.0382	2.34E-05	1.05E-06	565,666	4,206,949	10
921	0.0367	2.25E-05	9.87E-07	565,766	4,206,949	10
922	0.0354	2.17E-05	9.40E-07	565,866	4,206,949	10
923	0.0341	2.09E-05	8.73E-07	565,966	4,206,949	10
924	0.033	2.02E-05	8.25E-07	566,066	4,206,949	10
925	0.0319	1.95E-05	7.87E-07	566,166	4,206,949	10
926	0.0309	1.89E-05	7.40E-07	566,266	4,206,949	10
927	0.03	1.84E-05	7.07E-07	566,366	4,206,949	10
928	0.0292	1.78E-05	6.68E-07	566,466	4,206,949	10
929	0.0284	1.74E-05	6.29E-07	566,566	4,206,949	10
930	0.0276	1.69E-05	5.99E-07	566,666	4,206,949	10
931	0.0269	1.64E-05	5.73E-07	566,766	4,206,949	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
932	0.0145	8.85E-06	9.46E-07	561,966	4,206,849	10
933	0.0148	9.05E-06	1.01E-06	562,066	4,206,849	10
934	0.015	9.15E-06	1.06E-06	562,166	4,206,849	10
935	0.0153	9.35E-06	1.12E-06	562,266	4,206,849	10
936	0.0157	9.61E-06	1.19E-06	562,366	4,206,849	10
937	0.0162	9.92E-06	1.27E-06	562,466	4,206,849	10
938	0.0168	1.03E-05	1.36E-06	562,566	4,206,849	10
939	0.0174	1.06E-05	1.46E-06	562,666	4,206,849	10
940	0.018	1.10E-05	1.56E-06	562,766	4,206,849	10
941	0.0188	1.15E-05	1.69E-06	562,866	4,206,849	10
942	0.0195	1.20E-05	1.83E-06	562,966	4,206,849	10
943	0.0203	1.24E-05	2.06E-06	563,066	4,206,849	10
944	0.0209	1.28E-05	2.30E-06	563,166	4,206,849	10
945	0.021	1.29E-05	2.37E-06	563,266	4,206,849	10
946	0.021	1.29E-05	2.10E-06	563,366	4,206,849	10
947	0.0212	1.30E-05	1.88E-06	563,466	4,206,849	10
948	0.0249	1.52E-05	2.37E-06	563,566	4,206,849	10
949	0.0377	2.31E-05	2.82E-06	563,666	4,206,849	10
950	0.051	3.12E-05	3.20E-06	563,766	4,206,849	10
951	0.056	3.43E-05	3.00E-06	563,866	4,206,849	10
952	0.0555	3.39E-05	2.66E-06	563,966	4,206,849	10
953	0.0531	3.25E-05	2.50E-06	564,066	4,206,849	10
954	0.0504	3.08E-05	2.32E-06	564,166	4,206,849	10
955	0.048	2.93E-05	2.08E-06	564,266	4,206,849	10
956	0.0458	2.80E-05	2.03E-06	564,366	4,206,849	10
957	0.044	2.69E-05	1.90E-06	564,466	4,206,849	10
958	0.0426	2.61E-05	1.85E-06	564,566	4,206,849	10
959	0.0415	2.54E-05	1.78E-06	564,666	4,206,849	10
960	0.0405	2.48E-05	1.69E-06	564,766	4,206,849	10
961	0.0398	2.43E-05	1.60E-06	564,866	4,206,849	10
962	0.0392	2.40E-05	1.56E-06	564,966	4,206,849	10
963	0.0387	2.36E-05	1.48E-06	565,066	4,206,849	10
964	0.0381	2.33E-05	1.41E-06	565,166	4,206,849	10
965	0.0376	2.30E-05	1.34E-06	565,266	4,206,849	10
966	0.0367	2.24E-05	1.23E-06	565,366	4,206,849	10
967	0.0357	2.19E-05	1.14E-06	565,466	4,206,849	10
968	0.0347	2.12E-05	1.06E-06	565,566	4,206,849	10
969	0.0337	2.06E-05	9.86E-07	565,666	4,206,849	10
970	0.0327	2.00E-05	9.29E-07	565,766	4,206,849	10
971	0.0318	1.95E-05	8.76E-07	565,866	4,206,849	10
972	0.0309	1.89E-05	8.45E-07	565,966	4,206,849	10
973	0.03	1.83E-05	8.06E-07	566,066	4,206,849	10
974	0.0291	1.78E-05	7.50E-07	566,166	4,206,849	10
975	0.0283	1.73E-05	7.07E-07	566,266	4,206,849	10
976	0.0275	1.68E-05	6.83E-07	566,366	4,206,849	10
977	0.0268	1.64E-05	6.55E-07	566,466	4,206,849	10
978	0.0261	1.60E-05	6.29E-07	566,566	4,206,849	10
979	0.0255	1.56E-05	6.00E-07	566,666	4,206,849	10
980	0.0249	1.52E-05	5.68E-07	566,766	4,206,849	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
981	0.0121	7.41E-06	9.55E-07	561,966	4,206,749	10
982	0.0122	7.46E-06	1.00E-06	562,066	4,206,749	10
983	0.0122	7.47E-06	1.04E-06	562,166	4,206,749	10
984	0.0123	7.53E-06	1.09E-06	562,266	4,206,749	10
985	0.0124	7.59E-06	1.14E-06	562,366	4,206,749	10
986	0.0126	7.70E-06	1.20E-06	562,466	4,206,749	10
987	0.0128	7.85E-06	1.29E-06	562,566	4,206,749	10
988	0.013	7.94E-06	1.36E-06	562,666	4,206,749	10
989	0.0131	8.03E-06	1.47E-06	562,766	4,206,749	10
990	0.0133	8.11E-06	1.59E-06	562,866	4,206,749	10
991	0.0133	8.15E-06	1.67E-06	562,966	4,206,749	10
992	0.0133	8.12E-06	1.68E-06	563,066	4,206,749	10
993	0.0132	8.09E-06	1.55E-06	563,166	4,206,749	10
994	0.0134	8.19E-06	1.36E-06	563,266	4,206,749	10
995	0.0134	8.21E-06	1.36E-06	563,366	4,206,749	10
996	0.014	8.54E-06	1.66E-06	563,466	4,206,749	10
997	0.017	1.04E-05	1.80E-06	563,566	4,206,749	10
998	0.0226	1.38E-05	2.00E-06	563,666	4,206,749	10
999	0.0282	1.73E-05	2.26E-06	563,766	4,206,749	10
1000	0.0323	1.98E-05	2.19E-06	563,866	4,206,749	10
1001	0.0348	2.13E-05	2.13E-06	563,966	4,206,749	10
1002	0.0357	2.18E-05	2.04E-06	564,066	4,206,749	10
1003	0.0357	2.18E-05	1.87E-06	564,166	4,206,749	10
1004	0.0353	2.16E-05	1.86E-06	564,266	4,206,749	10
1005	0.0347	2.13E-05	1.72E-06	564,366	4,206,749	10
1006	0.0342	2.09E-05	1.67E-06	564,466	4,206,749	10
1007	0.0338	2.07E-05	1.60E-06	564,566	4,206,749	10
1008	0.0335	2.05E-05	1.53E-06	564,666	4,206,749	10
1009	0.0332	2.03E-05	1.47E-06	564,766	4,206,749	10
1010	0.0329	2.02E-05	1.44E-06	564,866	4,206,749	10
1011	0.0327	2.00E-05	1.38E-06	564,966	4,206,749	10
1012	0.0325	1.99E-05	1.32E-06	565,066	4,206,749	10
1013	0.0323	1.97E-05	1.26E-06	565,166	4,206,749	10
1014	0.0321	1.96E-05	1.22E-06	565,266	4,206,749	10
1015	0.0317	1.94E-05	1.14E-06	565,366	4,206,749	10
1016	0.0311	1.90E-05	1.06E-06	565,466	4,206,749	10
1017	0.0305	1.86E-05	9.83E-07	565,566	4,206,749	10
1018	0.0298	1.82E-05	9.31E-07	565,666	4,206,749	10
1019	0.0292	1.78E-05	8.78E-07	565,766	4,206,749	10
1020	0.0285	1.75E-05	8.35E-07	565,866	4,206,749	10
1021	0.0279	1.71E-05	7.90E-07	565,966	4,206,749	10
1022	0.0273	1.67E-05	7.52E-07	566,066	4,206,749	10
1023	0.0267	1.63E-05	7.33E-07	566,166	4,206,749	10
1024	0.026	1.59E-05	7.03E-07	566,266	4,206,749	10
1025	0.0253	1.55E-05	6.63E-07	566,366	4,206,749	10
1026	0.0247	1.51E-05	6.24E-07	566,466	4,206,749	10
1027	0.0242	1.48E-05	6.04E-07	566,566	4,206,749	10
1028	0.0236	1.45E-05	5.87E-07	566,666	4,206,749	10
1029	0.0231	1.41E-05	5.68E-07	566,766	4,206,749	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
1030	0.01	6.14E-06	9.37E-07	561,966	4,206,649	10
1031	0.01	6.13E-06	9.77E-07	562,066	4,206,649	10
1032	0.00987	6.04E-06	9.91E-07	562,166	4,206,649	10
1033	0.00985	6.02E-06	1.04E-06	562,266	4,206,649	10
1034	0.00979	5.99E-06	1.09E-06	562,366	4,206,649	10
1035	0.00972	5.95E-06	1.14E-06	562,466	4,206,649	10
1036	0.00983	6.02E-06	1.23E-06	562,566	4,206,649	10
1037	0.0098	6.00E-06	1.29E-06	562,666	4,206,649	10
1038	0.00976	5.97E-06	1.32E-06	562,766	4,206,649	10
1039	0.00969	5.93E-06	1.31E-06	562,866	4,206,649	10
1040	0.00965	5.90E-06	1.24E-06	562,966	4,206,649	10
1041	0.00973	5.95E-06	1.12E-06	563,066	4,206,649	10
1042	0.00993	6.08E-06	1.08E-06	563,166	4,206,649	10
1043	0.00987	6.04E-06	1.08E-06	563,266	4,206,649	10
1044	0.00983	6.01E-06	1.26E-06	563,366	4,206,649	10
1045	0.0108	6.63E-06	1.37E-06	563,466	4,206,649	10
1046	0.013	7.95E-06	1.46E-06	563,566	4,206,649	10
1047	0.0162	9.90E-06	1.54E-06	563,666	4,206,649	10
1048	0.0189	1.15E-05	1.64E-06	563,766	4,206,649	10
1049	0.0219	1.34E-05	1.73E-06	563,866	4,206,649	10
1050	0.024	1.47E-05	1.68E-06	563,966	4,206,649	10
1051	0.0256	1.57E-05	1.65E-06	564,066	4,206,649	10
1052	0.0265	1.62E-05	1.64E-06	564,166	4,206,649	10
1053	0.027	1.65E-05	1.53E-06	564,266	4,206,649	10
1054	0.0272	1.67E-05	1.52E-06	564,366	4,206,649	10
1055	0.0273	1.67E-05	1.47E-06	564,466	4,206,649	10
1056	0.0274	1.68E-05	1.43E-06	564,566	4,206,649	10
1057	0.0274	1.68E-05	1.37E-06	564,666	4,206,649	10
1058	0.0274	1.68E-05	1.33E-06	564,766	4,206,649	10
1059	0.0275	1.68E-05	1.28E-06	564,866	4,206,649	10
1060	0.0275	1.68E-05	1.23E-06	564,966	4,206,649	10
1061	0.0275	1.68E-05	1.18E-06	565,066	4,206,649	10
1062	0.0275	1.68E-05	1.15E-06	565,166	4,206,649	10
1063	0.0275	1.69E-05	1.10E-06	565,266	4,206,649	10
1064	0.0275	1.68E-05	1.05E-06	565,366	4,206,649	10
1065	0.0271	1.66E-05	9.69E-07	565,466	4,206,649	10
1066	0.0268	1.64E-05	9.15E-07	565,566	4,206,649	10
1067	0.0264	1.61E-05	8.64E-07	565,666	4,206,649	10
1068	0.026	1.59E-05	8.24E-07	565,766	4,206,649	10
1069	0.0256	1.56E-05	7.87E-07	565,866	4,206,649	10
1070	0.0252	1.54E-05	7.43E-07	565,966	4,206,649	10
1071	0.0248	1.52E-05	7.14E-07	566,066	4,206,649	10
1072	0.0244	1.49E-05	6.87E-07	566,166	4,206,649	10
1073	0.0239	1.46E-05	6.59E-07	566,266	4,206,649	10
1074	0.0234	1.43E-05	6.40E-07	566,366	4,206,649	10
1075	0.0229	1.40E-05	6.19E-07	566,466	4,206,649	10
1076	0.0224	1.37E-05	5.90E-07	566,566	4,206,649	10
1077	0.022	1.34E-05	5.62E-07	566,666	4,206,649	10
1078	0.0215	1.32E-05	5.39E-07	566,766	4,206,649	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
1079	0.00827	5.06E-06	9.09E-07	561,966	4,206,549	10
1080	0.00818	5.00E-06	9.42E-07	562,066	4,206,549	10
1081	0.00803	4.91E-06	9.71E-07	562,166	4,206,549	10
1082	0.00791	4.84E-06	1.01E-06	562,266	4,206,549	10
1083	0.00778	4.76E-06	1.04E-06	562,366	4,206,549	10
1084	0.00762	4.66E-06	1.05E-06	562,466	4,206,549	10
1085	0.00767	4.69E-06	1.09E-06	562,566	4,206,549	10
1086	0.0076	4.65E-06	1.08E-06	562,666	4,206,549	10
1087	0.00756	4.62E-06	1.03E-06	562,766	4,206,549	10
1088	0.0076	4.65E-06	9.54E-07	562,866	4,206,549	10
1089	0.00776	4.75E-06	8.97E-07	562,966	4,206,549	10
1090	0.00792	4.85E-06	9.02E-07	563,066	4,206,549	10
1091	0.00781	4.78E-06	8.91E-07	563,166	4,206,549	10
1092	0.00759	4.65E-06	9.84E-07	563,266	4,206,549	10
1093	0.00806	4.93E-06	1.10E-06	563,366	4,206,549	10
1094	0.00894	5.47E-06	1.16E-06	563,466	4,206,549	10
1095	0.0105	6.43E-06	1.22E-06	563,566	4,206,549	10
1096	0.0126	7.72E-06	1.24E-06	563,666	4,206,549	10
1097	0.0141	8.66E-06	1.29E-06	563,766	4,206,549	10
1098	0.0163	9.98E-06	1.41E-06	563,866	4,206,549	10
1099	0.018	1.10E-05	1.44E-06	563,966	4,206,549	10
1100	0.0194	1.19E-05	1.42E-06	564,066	4,206,549	10
1101	0.0205	1.25E-05	1.37E-06	564,166	4,206,549	10
1102	0.0212	1.30E-05	1.37E-06	564,266	4,206,549	10
1103	0.0218	1.34E-05	1.33E-06	564,366	4,206,549	10
1104	0.0223	1.36E-05	1.30E-06	564,466	4,206,549	10
1105	0.0227	1.39E-05	1.26E-06	564,566	4,206,549	10
1106	0.023	1.40E-05	1.24E-06	564,666	4,206,549	10
1107	0.0231	1.41E-05	1.20E-06	564,766	4,206,549	10
1108	0.0233	1.42E-05	1.15E-06	564,866	4,206,549	10
1109	0.0234	1.43E-05	1.12E-06	564,966	4,206,549	10
1110	0.0235	1.44E-05	1.09E-06	565,066	4,206,549	10
1111	0.0236	1.44E-05	1.04E-06	565,166	4,206,549	10
1112	0.0238	1.46E-05	1.01E-06	565,266	4,206,549	10
1113	0.0239	1.46E-05	9.58E-07	565,366	4,206,549	10
1114	0.0238	1.46E-05	9.07E-07	565,466	4,206,549	10
1115	0.0236	1.44E-05	8.47E-07	565,566	4,206,549	10
1116	0.0234	1.43E-05	8.06E-07	565,666	4,206,549	10
1117	0.0232	1.42E-05	7.69E-07	565,766	4,206,549	10
1118	0.0229	1.40E-05	7.24E-07	565,866	4,206,549	10
1119	0.0226	1.39E-05	7.04E-07	565,966	4,206,549	10
1120	0.0224	1.37E-05	6.79E-07	566,066	4,206,549	10
1121	0.0221	1.35E-05	6.46E-07	566,166	4,206,549	10
1122	0.0219	1.34E-05	6.19E-07	566,266	4,206,549	10
1123	0.0215	1.32E-05	6.00E-07	566,366	4,206,549	10
1124	0.0212	1.30E-05	5.80E-07	566,466	4,206,549	10
1125	0.0208	1.27E-05	5.67E-07	566,566	4,206,549	10
1126	0.0204	1.25E-05	5.50E-07	566,666	4,206,549	10
1127	0.0201	1.23E-05	5.30E-07	566,766	4,206,549	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
1128	0.0068	4.16E-06	8.78E-07	561,966	4,206,449	10
1129	0.00668	4.09E-06	9.08E-07	562,066	4,206,449	10
1130	0.00654	4.00E-06	9.26E-07	562,166	4,206,449	10
1131	0.00638	3.90E-06	9.29E-07	562,266	4,206,449	10
1132	0.00625	3.82E-06	9.26E-07	562,366	4,206,449	10
1133	0.00612	3.74E-06	8.95E-07	562,466	4,206,449	10
1134	0.00613	3.75E-06	8.71E-07	562,566	4,206,449	10
1135	0.00619	3.79E-06	8.27E-07	562,666	4,206,449	10
1136	0.0063	3.85E-06	7.78E-07	562,766	4,206,449	10
1137	0.00648	3.96E-06	7.52E-07	562,866	4,206,449	10
1138	0.0066	4.04E-06	7.70E-07	562,966	4,206,449	10
1139	0.00646	3.95E-06	7.56E-07	563,066	4,206,449	10
1140	0.0062	3.79E-06	7.86E-07	563,166	4,206,449	10
1141	0.00637	3.90E-06	9.09E-07	563,266	4,206,449	10
1142	0.00695	4.25E-06	9.58E-07	563,366	4,206,449	10
1143	0.00761	4.66E-06	1.00E-06	563,466	4,206,449	10
1144	0.00882	5.39E-06	1.03E-06	563,566	4,206,449	10
1145	0.0103	6.33E-06	1.05E-06	563,666	4,206,449	10
1146	0.0114	6.98E-06	1.09E-06	563,766	4,206,449	10
1147	0.0128	7.84E-06	1.18E-06	563,866	4,206,449	10
1148	0.0143	8.76E-06	1.23E-06	563,966	4,206,449	10
1149	0.0154	9.44E-06	1.21E-06	564,066	4,206,449	10
1150	0.0164	1.01E-05	1.22E-06	564,166	4,206,449	10
1151	0.0172	1.05E-05	1.18E-06	564,266	4,206,449	10
1152	0.0179	1.09E-05	1.18E-06	564,366	4,206,449	10
1153	0.0185	1.13E-05	1.16E-06	564,466	4,206,449	10
1154	0.019	1.16E-05	1.13E-06	564,566	4,206,449	10
1155	0.0194	1.19E-05	1.11E-06	564,666	4,206,449	10
1156	0.0198	1.21E-05	1.08E-06	564,766	4,206,449	10
1157	0.02	1.22E-05	1.05E-06	564,866	4,206,449	10
1158	0.0202	1.23E-05	1.02E-06	564,966	4,206,449	10
1159	0.0203	1.24E-05	9.84E-07	565,066	4,206,449	10
1160	0.0205	1.25E-05	9.70E-07	565,166	4,206,449	10
1161	0.0207	1.27E-05	9.34E-07	565,266	4,206,449	10
1162	0.021	1.28E-05	9.05E-07	565,366	4,206,449	10
1163	0.021	1.29E-05	8.52E-07	565,466	4,206,449	10
1164	0.0209	1.28E-05	8.00E-07	565,566	4,206,449	10
1165	0.0208	1.27E-05	7.53E-07	565,666	4,206,449	10
1166	0.0207	1.27E-05	7.12E-07	565,766	4,206,449	10
1167	0.0206	1.26E-05	6.89E-07	565,866	4,206,449	10
1168	0.0204	1.25E-05	6.60E-07	565,966	4,206,449	10
1169	0.0203	1.24E-05	6.33E-07	566,066	4,206,449	10
1170	0.0201	1.23E-05	6.14E-07	566,166	4,206,449	10
1171	0.0199	1.22E-05	5.92E-07	566,266	4,206,449	10
1172	0.0198	1.21E-05	5.66E-07	566,366	4,206,449	10
1173	0.0195	1.20E-05	5.47E-07	566,466	4,206,449	10
1174	0.0193	1.18E-05	5.30E-07	566,566	4,206,449	10
1175	0.019	1.16E-05	5.16E-07	566,666	4,206,449	10
1176	0.0187	1.15E-05	5.05E-07	566,766	4,206,449	10

Receptor	Cancer Risk	Hazard Indices		UTM Coodinate		ZONE
	# in a million	Chronic	Acute	Easting	Northing	
1177	0.00561	3.43E-06	8.27E-07	561,966	4,206,349	10
1178	0.00548	3.35E-06	8.29E-07	562,066	4,206,349	10
1179	0.00532	3.26E-06	8.16E-07	562,166	4,206,349	10
1180	0.00525	3.21E-06	8.02E-07	562,266	4,206,349	10
1181	0.00515	3.15E-06	7.61E-07	562,366	4,206,349	10
1182	0.0051	3.12E-06	7.11E-07	562,466	4,206,349	10
1183	0.0052	3.18E-06	6.74E-07	562,566	4,206,349	10
1184	0.00538	3.29E-06	6.56E-07	562,666	4,206,349	10
1185	0.00557	3.40E-06	6.63E-07	562,766	4,206,349	10
1186	0.00564	3.45E-06	6.68E-07	562,866	4,206,349	10
1187	0.0055	3.37E-06	6.53E-07	562,966	4,206,349	10
1188	0.00524	3.21E-06	6.80E-07	563,066	4,206,349	10
1189	0.00524	3.21E-06	7.79E-07	563,166	4,206,349	10
1190	0.00565	3.46E-06	8.14E-07	563,266	4,206,349	10
1191	0.00609	3.73E-06	8.47E-07	563,366	4,206,349	10
1192	0.00664	4.06E-06	8.75E-07	563,466	4,206,349	10
1193	0.0076	4.65E-06	9.00E-07	563,566	4,206,349	10
1194	0.00876	5.36E-06	9.23E-07	563,666	4,206,349	10
1195	0.00963	5.89E-06	9.58E-07	563,766	4,206,349	10
1196	0.0105	6.44E-06	9.95E-07	563,866	4,206,349	10
1197	0.0118	7.21E-06	1.05E-06	563,966	4,206,349	10
1198	0.0128	7.82E-06	1.07E-06	564,066	4,206,349	10
1199	0.0136	8.31E-06	1.06E-06	564,166	4,206,349	10
1200	0.0143	8.75E-06	1.06E-06	564,266	4,206,349	10
1201	0.015	9.16E-06	1.04E-06	564,366	4,206,349	10
1202	0.0156	9.53E-06	1.03E-06	564,466	4,206,349	10
1203	0.0161	9.87E-06	1.02E-06	564,566	4,206,349	10
1204	0.0166	1.02E-05	9.98E-07	564,666	4,206,349	10
1205	0.017	1.04E-05	9.78E-07	564,766	4,206,349	10
1206	0.0173	1.06E-05	9.61E-07	564,866	4,206,349	10
1207	0.0175	1.07E-05	9.29E-07	564,966	4,206,349	10
1208	0.0178	1.09E-05	9.16E-07	565,066	4,206,349	10
1209	0.018	1.10E-05	8.89E-07	565,166	4,206,349	10
1210	0.0182	1.12E-05	8.64E-07	565,266	4,206,349	10
1211	0.0185	1.13E-05	8.41E-07	565,366	4,206,349	10
1212	0.0187	1.14E-05	8.08E-07	565,466	4,206,349	10
1213	0.0187	1.14E-05	7.63E-07	565,566	4,206,349	10
1214	0.0186	1.14E-05	7.12E-07	565,666	4,206,349	10
1215	0.0186	1.14E-05	6.78E-07	565,766	4,206,349	10
1216	0.0185	1.13E-05	6.55E-07	565,866	4,206,349	10
1217	0.0185	1.13E-05	6.23E-07	565,966	4,206,349	10
1218	0.0184	1.12E-05	5.99E-07	566,066	4,206,349	10
1219	0.0183	1.12E-05	5.80E-07	566,166	4,206,349	10
1220	0.0182	1.11E-05	5.64E-07	566,266	4,206,349	10
1221	0.0181	1.11E-05	5.45E-07	566,366	4,206,349	10
1222	0.018	1.10E-05	5.25E-07	566,466	4,206,349	10
1223	0.0178	1.09E-05	5.02E-07	566,566	4,206,349	10
1224	0.0176	1.08E-05	4.85E-07	566,666	4,206,349	10
1225	0.0174	1.07E-05	4.75E-07	566,766	4,206,349	10

Appendix C

Sensitive Species Table

Biological Resources Table 1. Potential for Special Status Plants to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2007) and California Native Plant Society (CNPS) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Plants			
Amsinckia lunaris bent-flowered fiddleneck	List 1B	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. 3-500 m. Blooms March-June.	**Unlikely.** Grassland could provide suitable habitat to support this species, but this species was not found during rare plant surveys in 2006 or the site survey in 2007.
Arctostaphylos pallida pallid manzanita	FT, SE, List 1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub on siliceous shale or sandy or gravelly soil. 185-465 m. Blooms December-March.	**Unlikely.** Riparian woodland is the only woody habitat in the Project Area. Two of the three species it has previously been observed with (*Arctostaphylos crustacea* and *Quercus wislizeni*) do not occur in the Project Area.
Aster lentus Suisun Marsh aster	List 1B	Brackish and freshwater marshes and swamps. 0-3 m. Blooms May-November.	**No Potential.** Most commonly found along brackish slough banks and marshes with tidal influence. Marsh habitat in Project Area not tidally influenced.
Astragalus tener var. *tener* alkali milk-vetch	List 1B	Playas, valley and foothill grassland on adobe clay, alkaline vernal pools. 1-60 m. Blooms March-June.	**Unlikely.** Grassland seeps may provide suitable habitat but species commonly associated with this species are not present in the Project Area.

Biological Resources Table 1. Potential for Special Status Plants to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2007) and California Native Plant Society (CNPS) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

Atriplex joaquiniana San Joaquin spearscale	List 1B	Chenopod scrub, meadows and seeps, playas, alkaline valley and foothill grassland. 1-835 m. Blooms April-October.	**Unlikely.** Grassland areas with curly dock (*Rumex crispus*) may provide suitable habitat, but this species was not found during rare plant surveys in 2006 or the site survey in 2007.
Balsamorhiza plumosa big-scale balsamroot	List 1B	Chaparral, cismontane woodland, valley and foothill grassland, sometimes on serpentine soil. 90-1400 m. Blooms March-June.	**Unlikely.** Grassland may provide suitable habitat, but serpentine soil not present in the Project Area. Species has not been observed near the Project Area since 1988.
Blepharizonia plumosa big tarplant	List 1B	Valley and foothill grassland. 30-505 m. Blooms July-October.	**Unlikely.** Grassland may provide suitable habitat to support this species, but species has not been observed near Project Area since 1937.
Calochortus pulchellus Mt. Diablo fairy-lantern	List 1B	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. 30-840 m. Blooms April-June.	**Unlikely.** Woody habitats in the Project Area are limited and may provide inadequate cover. Species commonly associated with this species are not present in the Project Area.
Calystegia purpurata ssp. *saxicola* coastal bluff morning-glory	List 1B	Coastal dunes, coastal scrub, North Coast coniferous forest. 10-105 m. Blooms May-September.	**No Potential.** Dunes and coniferous forest are not present in the Project Area. Species has not been observed near Project Area since 1893.
Castilleja affinis ssp. *neglecta* Tiburon Indian paintbrush	FE, ST, List 1B	Valley and foothill grassland sometimes on serpentinite. 60-400 m. Blooms April-June.	**Unlikely.** No serpentine soil present in the Project Area.

Biological Resources Table 1. Potential for Special Status Plants to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2007) and California Native Plant Society (CNPS) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

Ceanothus purpureus holly-leaved ceanothus	List 1B	Chaparral, cismontane woodland on rocky or volcanic soil. 120-640 m. Blooms February-June.	**No Potential.** Rocky and volcanic soils are not present in the Project Area.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	List 1B	Valley and foothill grassland, sometimes on alkaline soil. 1-230 m. Blooms May-October.	**Unlikely.** Grassland could provide suitable habitat to support this species, but this species was not found during rare plant surveys in 2006 or the site survey in 2007.
Centromadia parryi ssp. *parryi* pappose tarplant	List 1B	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (sometimes coastal salt), valley and foothill grassland, often on alkaline soil. 2-420 m. Blooms May-November.	**Unlikely.** Grassland seeps and swales may provide suitable habitat to support this species but alkaline soils are not present.
Cirsium andrewsii Franciscan thistle	List 1B	Broadleafed upland forest, coastal bluff scrub, coastal prairie, mesic coastal scrub, sometimes on serpentinite. 0-150 m. Blooms March-July.	**No Potential.** Upland forest, coastal bluff scrub and adequate coastal scrub habitats are not present in the Project Area.
Cirsium hydrophilum var. *hydrophilum* Suisun thistle	FE, List 1B	Marshes and swamps. 0-1 m. Blooms July-September.	**Unlikely.** Nearby occurrences occur on delta marsh islands.
Cordylanthus maritimus ssp. *palustris* Point Reyes bird's-beak	List 1B	Marshes and swamps (sometimes coastal salt). 0-10 m. Blooms June-October.	**No Potential.** Possibly extirpated in area. Species has not been observed near Project Area since 1891.

Biological Resources Table 1. Potential for Special Status Plants to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2007) and California Native Plant Society (CNPS) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

Cordylanthus mollis ssp. *mollis* soft bird's-beak	FE, ST, List 1B	Marshes and swamps (sometimes coastal salt). 0-3 m. Blooms July-November.	**Unlikely.** Limited marsh habitat not likely to support species. Many of the species it occurs with (ie, *Salicornia virginica*, *Triglochin maritima*, *Atriplex triangularis*) are not present in the Project Area.
Dirca occidentalis western leatherwood	List 1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, mesic riparian woodland. 50-395 m. Blooms January-March.	**No Potential.** Nearby populations occur in oak and bay laurel woodland which is not present in the Project Area.
Downingia pusilla dwarf downingia	List 2	Valley and foothill grassland, vernal pools. 1-445 m. Blooms March-May.	**No Potential.** Species is considered extirpated in this area.
Erigeron biolettii streamside daisy	List 3	Broadleafed upland forest, cismontane woodland, mesic North Coast coniferous forest on rocky soil. 30-1100 m. Blooms June-October.	**No Potential.** Forest and cismontane woodland are not present in the Project Area.
Eriogonum luteolum var. *caninum* Tiburon buckwheat	List 3	Chaparral, coastal prairie, valley and foothill grassland on serpentinite. 10-500 m. Blooms June-September.	**No Potential.** Chaparral, coastal prairie and serpentine soils are not present in the Project Area.
Eriogonum truncatum Mt. Diablo buckwheat	List 1B	Chaparral, coastal scrub, valley and foothill grassland on sandy soil. 3-350 m. Blooms April-September.	**Unlikely.** Grassland may provide suitable habitat but this species has not been documented near the Project Area since 1888.

Biological Resources Table 1. Potential for Special Status Plants to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2007) and California Native Plant Society (CNPS) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

Fritillaria liliacea fragrant fritillary	List 1B	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland, often on serpentinite. 3-410 m. Blooms February-April.	**Unlikely.** Grassland may provide suitable habitat but serpentine soils are not present in the Project Area.
Helianthella castanea Diablo helianthella	List 1B	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. 60-1300 m. Blooms March-June.	**Unlikely.** Grassland may provide suitable habitat but riparian habitat is not sufficient in Project Area to support this species.
Hoita strobilina Loma Prieta hoita	List 1B	Chaparral, cismontane woodland, mesic riparian woodland, usually on serpentinite. 30-860 m. Blooms May-July.	**No Potential.** Chaparral, woodland habitats and serpentine soils are not present in the Project Area.
Holocarpha macradenia Santa Cruz tarplant	FT, SE, List 1B	Coastal prairie, coastal scrub, valley and foothill grassland, often on clay or sandy soil. 10-220 m. Blooms June-October.	**Unlikely.** Most nearby populations extirpated, though grassland in the Project Area could provide suitable habitat to support this species.
Lasthenia conjugens Contra Costa goldfields	FE, List 1B	Cismontane woodland, playas, valley and foothill grassland, mesic vernal pools. 0-470 m. Blooms March-June.	**Unlikely.** Shallow depressions in grassland may provide suitable habitat for this species. Known to occur nearby at the headwaters of Rodeo Creek north of Hwy 4, but not observed in 2006 rare plant surveys or the site survey in 2007.
Lathyrus jepsonii var. *jepsonii* Delta tule pea	List 1B	Brackish and freshwater marshes and swamps. 0-4 m. Blooms May-July.	**No Potential.** Nearby occurrences of this species are in tidal marshes, which are not present in the Project Area.

Biological Resources Table 1. Potential for Special Status Plants to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2007) and California Native Plant Society (CNPS) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

Legenere limosa legenere	List 1B	Vernal pools. 1-880 m. Blooms April-June.	**Unlikely.** Seasonal wetlands may provide suitable habitat for this species but vernal pools are not present in the Project Area.
Lessingia hololeuca woolly-headed lessingia	List 3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland on clay or serpentine soils. 15-305 m. Blooms June-October.	**Unlikely.** Grassland habitat may be suitable, but forests and serpentine soils are not present in the Project Area.
Lilaeopsis masonii Mason's lilaeopsis	CR, List 1B	Brackish and freshwater marshes and swamps, riparian scrub. 0-10 m. Blooms April-November.	**Unlikely.** Nearby populations found along river banks and brackish marshes with many species not present in the Project Area. Marsh habitat in Project Area not likely to support species.
Malacothamnus hallii Hall's bush mallow	List 1B	Chaparral, coastal scrub. 10-760 m. Blooms May-September.	**No Potential.** Chaparral and suitable coastal scrub habitat are not present in the Project Area.
Meconella oregana Oregon meconella	List 1B	Coastal prairie, coastal scrub. 250-620 m. Blooms March-April.	**No Potential.** Coastal prairie and suitable coastal scrub are not present in the Project Area.
Micropus amphibolus Mt. Diablo cottonweed	List 3	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland on rocky soil. 45-825 m. Blooms March-May.	**No Potential.** Forest, chaparral, woodland and rocky soils are not present in the Project Area.
Monardella antonina ssp. *antonina* San Antonio Hills monardella	List 3	Chaparral, cismontane woodland. 500-1000 m. Blooms June-August.	**No Potential.** Chaparral and cismontane woodland are not present in the Project Area.

Biological Resources Table 1. Potential for Special Status Plants to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2007) and California Native Plant Society (CNPS) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

Monardella villosa ssp. *globosa* robust monardella	List 1B	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, valley and foothill grassland. 100-915 m. Blooms June-July.	**Unlikely.** Grassland may provide suitable habitat but suitable woody habitats are not present in the Project Area.
Polygonum marinense Marin knotweed	List 3	Marshes and swamps, often coastal salt or brackish. 0-10 m. Blooms May-August.	**No Potential.** Freshwater marsh in the Project Area does not provide suitable habitat for this species.
Senecio aphanactis rayless ragwort	List 2	Chaparral, cismontane woodland, alkaline coastal scrub. 15-800 m. Blooms January-April.	**No Potential.** Chaparral, woodland, and suitable coastal scrub are not present in the Project Area.
Streptanthus albidus ssp. *peramoenus* most beautiful jewel-flower	List 1B	Chaparral, cismontane woodland, valley and foothill grassland on serpentinite. 110-1000 m. Blooms April-June.	**No Potential.** Chaparral and serpentine soils are not present in the Project Area.
Suaeda californica California seablite	FE, List 1B	Marshes and swamps, often coastal salt. 0-15 m. Blooms July-October.	**No Potential.** Species last observed in 1912. Considered extirpated from the area.
Trifolium amoenum showy Indian clover	FE, List 1B	Coastal bluff scrub, valley and foothill grassland, sometimes on serpentinite. 5-415 m. Blooms April-June.	**Unlikely.** Grassland may provide suitable habitat, but species has not been observed near Project Area since 1952.
Trifolium depauperatum var. *hydrophilum* saline clover	List 1B	Marshes and swamps, valley and foothill grassland, sometimes mesic and alkaline, vernal pools. 0-300 m. Blooms April-June.	**Unlikely.** Seasonal wetland habitats may provide suitable habitat but species extirpated from documented location near the Project Area.

Biological Resources Table 1. Potential for Special Status Plants to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2007) and California Native Plant Society (CNPS) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

Viburnum ellipticum oval-leaved viburnum	List 2	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1400 m. Blooms May-June.	**No Potential.** Suitable woody habitats are not present in the Project Area.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
SE	State Endangered
ST	State Threatened
SR	State Rare
List 1A	CNPS List 1A: Plants presumed extinct in California
List 1B	CNPS List 1B: Plants rare, threatened or endangered in California and elsewhere
List 2	CNPS List 2: Plants rare, threatened, or endangered in California, but more common elsewhere
List 3	CNPS List 3: Plants about which CNPS needs more information (a review list)

Biological Resources Table 2. Potential for Special Status Wildlife to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2006) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Mammals			
Suisun shrew *Sorex ornatus sinuosus*	CSC	Found in tidal marshes of the north shores of San Pablo and Suisun Bays. Requires dense, low-lying cover, driftweed and other litter above mean high-tide line for nesting and foraging.	**Not Present**. Suitable tidal marsh habitat is not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007)
salt-marsh wandering shrew *Sorex vagrans halicoetes*	CSC	Found in salt marshes of the South Arm of San Francisco Bay. Prefer medium to high marsh 6-8ft above sea level.	**Not Present**. Suitable salt marsh habitat is not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007)
pallid bat *Antrozus pallidus*	CSC, WBWG	Occupies a variety of habitats at low elevation including grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Unlikely.** May occasionally forage in the Project Area, but suitable roosting habitat is not present in the Project Area. Human activity in the vicinity of the Project Area may preclude this species.
silver-haired bat *Lasionycteris noctivagans*	CSC	Roosts in hollow trees beneath exfoliating bark, in abandoned woodpecker holes, or under rocks in coastal or montane forests near water.	**Not Present.** Suitable roosting habitat is not present in the vicinity of the Project Area. Nearest occurrence 13 miles to the south (CNDDB 2007).

Biological Resources Table 2. Potential for Special Status Wildlife to occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (2006) Electronic Inventory search of the Cuttings Wharf, Cordelia, Fairfield South, Mare Island, Benicia, Vine Hill, Richmond, Briones Valley, and Walnut Creek USGS 7.5" quadrangles.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
hoary bat *Lasiurus cinereus*	CSC	Roosts in dense foliage of medium to large trees near water. Forages for moths at forest edges. Requires drinking water supply.	**Not Present.** Suitable forested habitat for roosting or foraging is not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).
big free-tailed bat *Nyctinomops macrotis*	CSC, WBWG	Roosts on high cliffs or rocky outcrops. Feeds primarily on moths. Usually occurs in low-lying areas in southern California.	**Not Present.** Suitable rocky cliff roosting habitat is not present in the Project Area. Not documented within 5 miles of Project Area; last documented in vicinity in 1979 (CNDDB 2007).
Berkeley kangaroo rat *Dipodomys heermanni berkeleyensis*	none	Open grassy hilltops and open spaces in chaparral and blue oak/grey pine woodlands. Needs fine, deep well-drained soil for burrowing.	**Not Present.** Last documented in vicinity in 1938; presumed extinct. This species has no protective status and is included for completeness only. Not documented within 5 miles of Project Area (CNDDB 2007).
San Pablo vole *Microtus californicus sanpabloensis*	CSC	Found in the salt marshes of San Pablo Creek on the south shore of San Pablo Bay. Constructs burrows in soft soil and feeds on grasses, sedges and herbs.	**Not Present**. Salt marsh habitat with soft soil burrows is not present within the Project Area.

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SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP	Found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Primary habitat is pickleweed-dominated, saline emergent marshes. Requires adjacent, upland areas for escape from high tides. Does not burrow.	**Not Present**. Suitable pickleweed-dominated habitat is not present within the Project Area.
American badger *Taxidea taxus*	CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable (crumbly) soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**Not Present**. Suitable burrowing and foraging habitat is not present within the Project Area. Human activity and a lack of prey base may preclude this species in the Project Area vicinity. Not documented within 5 miles of Project Area (CNDDB 2007).
Birds			
Great Blue Heron (rookery) *Ardea Herodias*	none	Rookery sites are protected. Inhabits freshwater, mudflats, tidal shallows, and marshes. Nests in colonies in trees or bushes adjacent to water.	**Not Present.** Suitable nesting habitat capable of supporting a rookery is not present in the Project Area.
Snowy Egret (rookery) *Egretta thula*	none	Rookery sites are protected. Coastal estuaries, fresh and saline emergent wetlands, ponds, slow-moving rivers, irrigation ditches, and fields. Nests in colonies in trees or bushes.	**Not Present.** Suitable nesting habitat capable of supporting a rookery is not present in the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).

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SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Cackling (=Aleutian Canada) Goose *Branta canadensis leucopareia*	FD	Winters on lakes and inland prairies. Forages on natural pasture or cultivated grain fields; loafs on lakes, reservoirs, and ponds.	**Not Present.** Suitable wintering habitat is not present in the Project Area. This species has no protective status and is included for completeness only. Not documented within 5 miles of Project Area (CNDDB 2007).
Cooper's Hawk *Accipter cooperi*	CSC	Associated with open or interrupted woodland and riparian habitats in the Coast ranges and foothills surrounding the Central Valley. Nests mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also nests in live oaks and eucalyptus.	**Unlikely**. May occasionally forage over the Project Area in marsh or grassland habitat; however unlikely to nest in Project Area due to high disturbance levels and a lack of suitable nesting sites.
Golden Eagle *Aquila chrysaetos*	CSC, CFP, BCC	Found in rolling foothills with open grasslands, scattered trees, and cliff-walled canyons	**Not Present**. Suitable nesting and foraging habitat in foothills and open grassland are not present within the Project Area.
Ferruginous Hawk *Buteo regalis*	CSC, BCC	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats. Preys on rabbits, ground squirrels and mice. Population trends may follow prey population cycles.	**Not Present**. Suitable nesting and foraging habitat in open grassland and desert scrub is not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).

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SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Swainson's Hawk *Buteo swainsoni*	ST, BCC	Breeds in stands with few trees in juniper-sage flats, riparian areas and oak savannah. Requires adjacent suitable foraging areas such as grasslands or grain fields supporting rodent populations.	**Not Present**. Suitable nesting and foraging habitat in juniper-sage flats, oak savannah, and grain fields are not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).
Northern Harrier *Circus cyaneus*	CSC	Nests and forages in grassland habitats, usually in association with coastal salt and freshwater marshes. Nests on ground in shrubby vegetation, usually at marsh edges; nests built of mounds of sticks in wet areas. May also occur in alkali desert sinks.	**Unlikely**. May occasionally forage near the Project Area in fragmented marsh or grassland habitat; however, unlikely to nest in Project Area due to high disturbance levels and lack of suitable nesting sites. Not documented within 5 miles of Project Area (CNDDB 2007).
White-tailed Kite *Elanus leucurus*	CFP	Year-long resident of coastal and valley lowlands. Forages in undisturbed open grasslands, meadows, farmlands, ruderal areas, and emergent wetlands. Broad-leafed deciduous trees and large bushes are used for nesting and roosting.	**Moderate Potential**. May be found foraging in or near the Project Area in marsh or grassland habitat; moderately suitable nesting habitat is present, however proximity to human activities and disturbance may preclude nesting attempts. Not documented within 5 miles of Project Area (CNDDB 2007).

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SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Bald Eagle *Haliaeetus leucocephalus*	FT, SE, CFP	Requires large bodies of water, or free-flowing rivers with abundant fish adjacent snags or other perches. Nests in large, old-growth, or dominant live trees with open branch work.	**Not Present**. Suitable foraging or nesting habitat is not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).
Osprey *Pandion haliaetus*	CSC	Frequents ocean shores, bays, fresh-water lakes, and larger streams. Prefers large trees, snags and dead-topped trees near large water bodies for cover and nesting. May travel 5-6 miles from nest to fishing areas.	**Unlikely**. Suitable nesting and foraging habitat not present within the Project Area.
American Peregrine Falcon *Falco peregrinus anatum*	SE, CFP, BCC	Winters throughout Central Valley. Requires protected cliffs and ledges for cover. Feeds on a variety of birds, and some mammals, insects, and fish.	**Unlikely**. May occasionally forage over the Project Area; however, unlikely to nest in Project Area due to high disturbance levels and lack of suitable cliff or ledge nesting sites. Not documented within 5 miles of Project Area (CNDDB 2007).
California Black Rail *Laterallus jamaicensis coturniculus*	ST, CFP, BCC	Rarely seen resident of saline, brackish, and fresh emergent wetlands in the San Francisco Bay area. Nests in dense stands of pickleweed	**Not Present**. Suitable pickleweed nesting and foraging habitat is not present within the Project Area.

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SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
California Clapper Rail *Rallus longirostris obsoletus*	FE, SE, CFP	Found in tidal salt marshes of the San Francisco Bay. Requires mudflats for foraging and dense vegetation on higher ground for nesting.	**Not Present**. Suitable salt marsh habitat is not present within the Project Area.
Western Snowy Plover *Charadrius alexandrinus nivosus*	FT, CSC	Found on sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly, or friable soils for nesting.	**Not Present.** Coastal beach habitat not present in the Project Area.
Caspian Tern (nesting colony) *Sterna caspia*	none	Nesting colonies are protected. Found in coastal areas, along rivers and lakes, in salt marshes, barrier islands, and river islands. Roosts in colonies on islands and isolated spits.	**Not Present.** Suitable nesting habitat is not present in the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).
Short-eared Owl *Asio flammeus*	CSC	Found in open, treeless areas with elevated sites for perches and dense vegetation for roosting and nesting. Tule patches/tall grass needed for nesting and daytime seclusion.	**Not Present**. Tule patches and appropriate roosting sites not present within the Project Area.
Burrowing Owl *Athene cunicularia hypugea*	CSC, BCC	Frequents open grasslands and shrublands with perches and burrows. Preys upon insects, small mammals, reptiles, birds, and carrion. Nests and roosts in old burrows of small mammals.	**Unlikely**. Suitable nesting and foraging habitat in open grassland and mammal burrows are not present within the Project Area.

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SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Loggerhead Shrike *Lanius ludovicianus*	CSC, BCC	Occurs in woodland, grassland, savannah, pinyon-juniper forest, desert, and scrub habitats. Prefers open areas with sparse shrubs, trees, posts, and other suitable perches which to forage for large insects. Nests are well-concealed above ground in densely-foliaged shrubs or trees.	**Unlikely.** Foraging and nesting habitat in the Project Area is highly fragmented and of low quality. Human activity may preclude this species in the Project Area vicinity. Not documented within 5 miles of Project Area (CNDDB 2007).
Saltmarsh Common Yellowthroat *Geothlypis trichas sinuosa*	CSC, BCC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Frequents low, dense vegetation near water. Requires thick, continuous cover down to water surface for foraging, and tall grasses, tule patches, or willows for nesting.	**Not Present**. Suitable salt marsh nesting and foraging habitat is not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).
Suisun Song Sparrow *Melospiza melodia maxillaris*	CSC, BCC	Resident of brackish-water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and pickleweed (*Salicornia)*; also known to frequent tangles bordering sloughs.	**Unlikely**. Suitable salt marsh nesting and foraging habitat is not present within the Project Area. Individuals may occasionally travel between Suisun and San Pablo bays through the Project Area.
San Pablo Song Sparrow *Melospiza melodia samuelis*	CSC, BCC	Resident of salt marshes along the north side of San Francisco and San Pablo Bays. Inhabits tidal sloughs in the *Salicornia* marshes; nests in gumweed (*Grindelia)* bordering slough channels.	**Unlikely**. Suitable salt marsh nesting and foraging habitat is not present within the Project Area. Individuals may occasionally travel between Suisun and San Pablo bays through the Project Area.

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SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Tricolored Blackbird *Agelaius tricolor*	CSC	A highly colonial species, most numerous in the Central Valley and vicinity. Usually nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs. Requires breeding habitat sufficient to support 30 nesting pairs.	**Unlikely.** Fragmented, low-quality habitat is present in portions of the Project Area where blackberries occur; however, it is unlikely there is sufficient vegetation density to support a breeding colony. Not documented within 5 miles of Project Area (CNDDB 2007).
Yellow-headed Blackbird *Xanthocephalus xanthocephalus*	none	Nests in freshwater emergent wetlands with dense vegetation and deep water, often along borders of lakes or ponds. Nests only where large insects such as *Odonata* are abundant; nesting timed with maximum emergence of aquatic insects.	**Unlikely**. Suitable wetland or emergent marsh nesting or foraging habitat is not present within the Project Area. Individuals may occasionally travel through the Project Area. This species has no protective status and is included herein for completeness only.
Reptiles and Amphibians			
western pond turtle *Actinemys (emys) marmorata*	CSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	**Unlikely**. Ponds or streams with mud banks are not present within the Project Area, and movement corridors are absent.

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Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Prefers south-facing slopes and ravines with rock outcroppings where shrubs occur with oak trees and grasses and small mammal burrows provide basking and refuge. Can occur in adjacent communities, including grassland and oak savanna. Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area hills.	**Not Present**. Suitable chaparral areas with rock outcrops are not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).
California tiger salamander *Ambystoma californiense*	FT,CSC	Inhabits annual grassland habitats with mammal burrows. Seasonal ponds and vernal pools are crucial to breeding.	**Not Present**. Suitable breeding and aestivation habitats are not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).
California red-legged frog *Rana aurora draytonii*	FT, CSC	Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Documented to disperse through upland habitats after rains.	**Present**. Suitable pond habitat is present within the Project Area in the freeway off-ramp loop, immediately adjacent to SR4. This species has been observed within the Loop parcel (Parcel 3), and is presumed extant.
Fishes			
delta smelt *Hypomesus transpacificus*	FT, ST	Live in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet.	**Not Present**. Suitable aquatic habitat is not present within the Project Area.

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SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Central California Coastal steelhead *Oncorhynchus mykiss*	FT, NMFS	Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**Not Present**. Suitable aquatic habitat is not present within the Project Area.
Sacramento splittail *Pogonichthys macrolepidotus*	CSC	Primarily freshwater fish, but tolerant of moderate salinity and can live in water with salinity up to 10-18 parts per thousand. Found in Sacramento Delta.	**Not Present**. Suitable aquatic habitat is not present within the Project Area.
Sacramento perch *Archoplites interruptus*	CSC	Historically found in the sloughs, slow-moving rivers and lakes of the central valley. Prefer warm water; aquatic vegetation is essential for young.	**Not Present**. Suitable aquatic habitat is not present within the Project Area.
Invertebrates			
Lee's microblind harvestman *Microcina leei*	none	Occurs in xeric (dry) habitats in the San Francisco Bay region. Generally found beneath exposed sandstone rocks in open grassland habitats.	**Unlikely**. Typical xeric grassland habitat with exposed sandstone is not present in the Project Area. This species has no protective status and is included for completeness only. Not documented within 5 miles of Project Area (CNDDB 2007).
vernal pool fairy shrimp *Branchinecta lynchi*	FT	Inhabit small, clear-water sandstone-depression pools, grassy swales, slumps, or basalt-flow depression pools.	**Not Present**. Suitable vernal pool habitat is not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).

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SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
California linderiella *Linderiella occidentalis*	SSI, RP	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Requires clear water with low alkalinity and conductivity.	**Not Present.** Neither vernal pool nor seasonal swale habitat is present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).
California freshwater shrimp *Syncaris pacifica*	FE	Found among submerged vegetation in low gradient streams.	**Not Present**. Suitable aquatic habitat is not present within the Project Area.
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT, FPD	Occurs in mature blue elderberry bushes in the Central Valley. Prefers to lay eggs in branches 2 to 8 inches in diameter.	**Not Present**. Blue elderberry is not present within the Project Area. Not documented within 5 miles of Project Area (CNDDB 2007).
monarch butterfly (roosting colony) *Danaus plexippus*	SSI	Roosting colonies are protected. Winter roost sites extend along the coast from northern Mendocino County to Baja California, Mexico. Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	**Not Present**. Large tree stands suitable for winter roost sites are not present within the Project Area.
San Francisco lacewing *Nothochrysa californica*	none	Occurs in a wide variety of coastal and coast range habitats from San Diego to British Columbia. Most closely associated with oak woodland habitats. Generalist predator on other invertebrates. One generation per year. Most abundant from April to May.	**Unlikely**. Typical oak woodland habitat is not present in the Project Area. This species has no protective status and is included for completeness only. Not documented within 5 miles of Project Area (CNDDB 2007).

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Bridges' coast range shoulderband (snail) *Helminthoglypta nickliniana bridgesi*	none	Inhabits open hillsides of Alameda and Contra Costa counties. Prefers rock piles, but also tends to colonize under tall grasses and weeds on hill slopes.	**Unlikely**. Typical open hill slope habitat is not present in the Project Area. This species has no protective status and is included for completeness only. Not documented within 5 miles of Project Area (CNDDB 2007).

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FD	Federal De-listed
FPD	Federal Proposed for De-listing
NMFS	Species under the Jurisdiction of the National Marine Fisheries Service
BCC	USFWS Birds of Conservation Concern
RP	Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan
SE	State Endangered
ST	State Threatened
CSC	CDFG Species of Special Concern
CFP	CDFG Fully Protected Animal
SSI	CDFG Special Status Invertebrates
WBWG	Western Bat Working Group High Priority species