APPENDIX F

Everson/Digby Natural Area Description

6.27 EVERSON/DIGBY

GENERAL DESCRIPTION AND LOCATION

Everson/Digby (E/D) is a 1.2-acre Natural Area located between Everson Street and Digby Street in the Diamond Heights area of San Francisco, east of Glen Canyon Park. Elevations range from 415 to 515 feet above sea level (Figure 6.27-1). The vegetation of E/D is composed primarily of grasslands with shrubs and trees along its lower boundary (Figure 6.27-1). E/D provides important habitat for native plants; grassland habitat; regionally significant City views; and suitable habitat for a variety of bird species.

GEOLOGY, HYDROLOGY, AND TRAILS

This Natural Area is an undeveloped open space comprised mostly of a steep hill rising up from Everson Street to Digby Street. Soil in this Natural Area is relatively shallow, typically less than one foot deep, and is underlain by Franciscan bedrock. The bedrock outcrops in the middle of the site, in a steep slope area (Figure 6.27-2).

There is no surface water at the site. Drainage of the area is by overland flow. Some rainfall percolates into fissures in the rock, but runoff generally is rapid.

No primary or secondary trials were observed in the E/D Natural Area. A paved sidewalk runs along Digby Street at the upper boundary of the natural area.

VEGETATION

The vegetation of E/D is classified into five series (Table 6.27-1; Figure 6.27-3). These series are within four sub-formations: approximately 79 percent of the area is grassland; 9 percent is forest; 7 percent is scrub; and 4 percent is classified as “other herb” (fennel). None of these series are dominated by native species.

Forest

One forest series was mapped at E/D: acacia forest. Within the Natural Area, only a small amount of land is covered by this species (0.11 acres).

Grassland

Two herbaceous series were mapped at E/D: wild oat grassland (0.95 acres) and fennel (0.05 acres). Wild oat grassland dominates the Natural Area.

Scrub

Two non-native scrub series were mapped at E/D: cottoneaster scrub (0.04 acres) and mixed exotic scrub which contains Scotch broom (*Cytisus scoparius*) (0.05 acres).

Sensitive Plant Species

No sensitive plant species have been observed at E/D. The California Natural Diversity Data Base (CNDDB) does not report the occurrence of any sensitive plant species at E/D (CNDDB 2009). It also does not provide potential habitat for sensitive plant species. Several native species were identified at E/D, including sky lupine (*Lupinus nanus*), yarrow (*Achillea millefolium*), and California melica (Melica californica).

Invasive Plant Species

All of the vegetation series at E/D are dominated by invasive species. As previously mentioned, wild oat grassland dominates the site. Acacia trees are encroaching into the Natural Area from the residential development that abuts E/D on the southern edge. Cotoneaster scrub, mixed exotic scrub and fennel occur in the eastern portion of E/D. Additional invasive species within the grassland include Bermuda buttercup (*Oxalis pes-caprae*), English plantain (*Plantago lanceolata*), and wild radish (*Raphanus sativus*).

WILDLIFE

Birds

The multi-storied complex habitat found within E/D and below the Natural Area may provide some nesting and roosting habitat for a wide variety of species. The grassland habitats of E/D provide foraging habitat for raptors such as red-tailed (*Buteo jamaicensis*) and red-shouldered (*Buteo lineatus*) hawks, while the Acacia forest edge provides potential nesting habitat for these species. Habitat for smaller birds (songbirds) is available in the scrub and forest habitats in and below the Natural Area. No areas of important bird habitat were delineated for this Natural Area.

Mammals, Reptiles, and Amphibians

No animal surveys were conducted at E/D; however, common animals are likely to occur here. Small mammals such as the California meadow vole (*Microtus californicus*), house mouse (*Mus musculus*), and pocket gopher (*Thomomys bottae*) are likely to be found in this habitat. Large mammals such as raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*) and Virginia opossum (*Didelphis virginiana*) are typical of urbanized parks in general and are expected to occur within E/D. Reptiles typical of grassland habitats, such as garter snakes, are suspected to occur here, but have not been reported. The CNDDB does not report any sensitive species as

occurring within the area (CNDDB 2009), and the area does not provide potential suitable habitat for sensitive species.

Invertebrates

Sensitive Invertebrate Species

At least three special-status species of butterflies potentially occur within the City of San Francisco: mission blue butterfly (*Icaricia icarioides missionensis*), San Bruno elfin butterfly (*Incisalia mossii bayensis*), and bay checkerspot butterfly (*Euphydryas editha bayensis*). The CNDDB does not report the occurrence of any special-status species of invertebrates at E/D (CNDDB 2009), and the site does not provide potential habitat for these species.

MANAGEMENT AREAS

The Management Areas (MAs) at E/D have been delineated based on the presence of diverse native grasslands. The MA-1a area supports a rich array of species including California poppy (*Eschscholzia californica*), purple needle grass (*Nassella pulchra*), and California melica (*Melica californica*), and is more intact habitat than the MA-2a area which borders Digby Street. The MA-3a areas include tree and shrub communities (Figure 6.27-4).

ISSUES AND RECOMMENDATIONS

Several conservation and recreation-related issues have been identified for E/D. Recommendations developed for each of these issues will guide restoration, enhancement, and maintenance work. In the following discussion, system-wide issues and recommendations (GR-1 for example; see Chapter 5) that apply to the entire Natural Area at E/D are presented first within each topical area, followed by site-specific issues and recommendations. Site-specific recommendations are keyed to the Management Area in which they should occur.

Site Improvements – Implementation of management recommendations at E/D would not change significantly the overall look of the park and would result in:

- improved wildlife habitat;
- enhancement of native grasslands.

Careful management and restoration of the grasslands at E/D will create a native grassland that is rich in plant species and offers habitat for sensitive species of butterflies. This grassland may be comparable to that found on the northern slope of Bayview Park (Section 6.17) or on San Bruno Mountain.

Vegetation

Issues relating to vegetation management at E/D involve the protection of habitats, typically though the control of invasive plants (GR-1). Specific actions to take in managing grasslands such as those present at E/D should be implemented (GR-3). No trees will be removed at E/D. Issues relating to the general safety of visitors and surrounding homes, fire hazards posed by vegetation and trees, and illicit activities must be considered during management of the Natural Areas (GR-13). In addition to these general recommendations, the following site-specific issues should be addressed.

Issue ED-1: Invasive species occur throughout E/D and pose a threat to the grasslands

> ***Recommendation ED-1a:*** Reduce and contain herbaceous and woody invasive species, including radish, fennel, and annual grasses in all Management Areas. Prevent the establishment of invasive trees in grasslands.
>
> ***Recommendation ED-1b:*** Areas where invasive species have been removed shall be revegetated using appropriate native plants. Existing grasslands will be enhanced and diversified as appropriate (MA-1a and MA-2a). Specifically, within MA-1a, efforts shall be taken to augment the existing uncommon grassland plant species such as silver lupine (*Lupinus albifrons* var. *collinus*). Within MA-2a, the existing non-native grassland should be slowly replaced with a native grassland including California poppy (*Eschscholzia californica*), purple needle grass (*Nassella pulchra*), and California melica (*Melica californica*). Using diversity, cover, and density targets generated from reference sites within and around San Francisco, plant native grassland species in the appropriate areas (see Appendix B).
>
> ***Recommendation ED-1c:*** Contain and/or reduce acacia, broom, cotoneaster, and fennel in MA-3a and diversify the grassland interface with wildlife-enhancing species and design.

Wildlife

Implementation of system-wide recommendations that relate to vegetation management and nesting birds (GR-4), predation (GR-7), increasing cover for small mammals and birds (GR-9) and installation of host plants for native insects (GR-10) would all serve to enhance the wildlife habitat at E/D.

Soils, Erosion, and Public Use

No primary or secondary trials were observed in the E/D Natural Area. The issue of erosion and habitat impacts related to social trails that may develop is addressed through implementation of GR-11 and GR-12.

Table xx. Vegetation series mapped at Everson/Digby.

	Vegetation Series	Total Acreage
Forest	acacia forest	0.11
	Subtotal	**0.11**
Scrub	cottoneaster scrub	0.04
	Scotch broom	0.05
	Subtotal	**0.09**
Grassland	wild oat grassland	0.95
	fennel	0.05
	Subtotal	**1.00**
Grand Total		**1.20**

SAN FRANCISCO RECREATION & PARKS

Source: Orthophoto - SFDT, 2007; Street Data - SFDPW, 2009; Contour Data - HJW, 2001; Property Data REIS, 2005; Significant Natural Area Data created by RPD Planning from information provided by RPD Natural Area Program, 2010; All Data are NAD 1983 StatePlane California III FIPS 0403 Feet

Created by Sean Stasio, SFRPD Planning Division for SFRPD Significant Natural Areas Program, November 2010

N

0 25 50 75 100
Feet

FIGURE 6.27-1

AERIAL PHOTOGRAPH, PROPERTY BOUNDARIES, AND NATURAL AREAS

Everson/Digby

Significant Natural Resource Areas Management Plan

San Francisco, California

Source: Orthophoto - SFDT, 2007; Street Data - SFDPW, 2009; All Data are NAD 1983 StatePlane California III FIPS 0403 Feet

Created by Yashekia Evans, Tetra Tech, for SFRPD Significant Natural Areas Program, April 2011.

N

0 50 100
Feet

FIGURE 6.27-2

SOILS AND LAND FEATURES

Everson/Digby

Significant Natural Resource Areas Management Plan

San Francisco, California

SAN FRANCISCO RECREATION & PARKS

Source: Orthophoto - SFDT, 2007; Street Data - SFDPW, 2009;
Significant Natural Area Data created by RPD Planning from information provided by RPD Natural Area Program, 2010;
All Data are NAD 1983 StatePlane California III FIPS 0403 Feet

Created by Sean Stasio, SFRPD Planning Division
for SFRPD Significant Natural Areas Program, November 2010

N

0 25 50 75 100
Feet

FIGURE 6.27-3

VEGETATION

Everson/Digby

Significant Natural Resource Areas Management Plan

San Francisco, California

Mgmt Area	Action
MA-1a	Maintain diverse native grassland
	Reintroduce sensitive plants
MA-2a	Maintain and enhance grassland
MA-3a	Maintain and enhance multi-storied forest-scrub ecotone with oaks, and buckeye
Natural Area Wide Management Actions	
	Reduce and contain herbaceous and woody weeds No invasive tree removal unless specified above Prevent recruitment of invasive trees unless specified above Provide access on designated trails only Social trails subject to closure Total invasive tree removal: 0; Total invasive trees to remain: 0. Implement erosion control as required (GR-12) Implement wildlife enhancements as appropriate

SAN FRANCISCO RECREATION & PARKS

Source: Orthophoto - SFDT, 2007; Street Data - SFDPW, 2009;
Significant Natural Area Data created by RPD Planning from information provided by RPD Natural Area Program, 2010;
All Data are NAD 1983 StatePlane California III FIPS 0403 Feet

Created by Sean Stasio, SFRPD Planning Division
for SFRPD Significant Natural Areas Program, NOvember 2010

N

0 25 50 75 100
Feet

FIGURE 6.27-4

MANAGEMENT AREAS

Everson/Digby

Significant Natural Resource Areas
Management Plan

San Francisco, California

APPENDIX G

Cumulative Projects

San Francisco Related Cumulative Projects List

Area Plans

PLAN AREA	NATURAL AREAS
Bayview Hunters Point	Bayview Park, Bernal Hill, India Basin Shoreline Park, Palou/Phelps
Hunters Point Shipyard	India Basin Shoreline Park
Market and Octavia	Buena Vista Park, Corona Heights
Mission	Bernal Hill

Planning Cases

NATURAL AREAS	CASE NO	PROJECT NAME	NOTICE
15th Avenue Steps	2008.0612	1427 11TH AV	Two-story vertical addition to the existing one-story, 1,368 sqft single-family dwelling, and a three-story horizontal side addition to the south side of existing dwelling. The resulting structure will be three stories in height and 2-dwelling units.
15th Avenue Steps	2010.0264	RPD-Grandview Park Restoration Work	Repair existing retaining walls, restore trail, provide new protective fencing, provide soil erosion control measures, and native plant restoration.
Balboa Natural Area	2010.0350	640 46TH AV	3rd-story vertical addition and remodel at 2nd-story of a single-family residence.
Bayview Park	2006.0422	Executive Park	General Plan Amendment and Zoning Map change to amend the Executive Park Subarea Plan of the South Bayshore Area Plan.
Bayview Park	2009.0311	SUNNYDALE SEWER IMPROVEMENT	SFPUC auxiliary sewer project to alleviate flooding in the Visitation Valley/Sunnydale neighborhood, with new main alignment N along county line to SF Bay; previous main tunnel alignment (1998.123E) Negative Declaration.
Bayview Park	2008.1110	6600 Third Street	100% Affordable DUs (42,238 square feet) and 21 off-street parking spaces. New building would be 40 feet tall. Demolition of 43 residential hotel rooms and construction of 25 new dwelling units and 55 group housing units.
Bayview Park	2009.0815	RPD-Candelstick Park	Add temporary pedestrain bridge over Hunters Point Expressway.
Bayview Park	2009.0839	BOS 091036-Third St/LeConte Affordable Housing SUD	Planning Code amendment establishing the Third Street and Le COnte Ave Affordable Housing Special Use District.
Bayview Park	2010.0863	Visitacion Valley Impact Fee	Amendments to the Planning Code Section 420.1-420.5: The Visitacion Valley Community Facilities and Infrastructure Fee and Fund [Board File No. 10-----]. Ordinance introduced by Supervisor Maxwell amending Planning Code Sections 420.1 (Findings), 420.2
Bayview Park	2010.0708	RPD- Candlestick Park 2010	Add temporary pedestrain bridge over Hunters Point Expressway.
Bernal Hill	2008.0283	41 MIRABEL AV	Existing 2-unit, 3-story, 3298 sqft residential building. Proposed unit merge of the top two floors, remodel garage into a unit, and addition of a 1-car garage.
Bernal Hill	2008.0409	384 HOLLADAY AV	Develop single-family dwellings on each lot with two off-street parking spaces each. Downslope Lots.
Bernal Hill	2009.0195	280 BAYSHORE BL	Micro Bio Diesel Refinery; blending, fueling hybrid
Bernal Hill	2009.0338	97 ANDOVER ST	Parking variance. Addition/Alteration of single-family residence.
Bernal Hill	2009.0725	128 ELSIE ST	New single-family residence on a vacant downsloping lot.
Bernal Hill	2009.1018	183 BREWSTER ST	New 2,811 sqft single-family residence on vacant lot.
Bernal Hill	2009.0276	CESAR CHAVEZ AUXILIARY SEWER	New 1.2mi auxiliary sewer to address localized flooding, Cesar Chavez Street Area. Alignment from east: off Napoleon, Jerrold, Precita, Cesar Chavez west to Valencia, Duncan, Guerrero, Fair, Coleridge, Coso. Replaces existing brick sewer in Cesar Chavez
Bernal Hill	2009.0753	3155 Cesar Chavez Street	Vertical and horizontal addition of a church in an R-district. Requires CU per 209.3(j)
Bernal Hill	2009.1173	1467 SHOTWELL ST	2-story side addition and alterations to the existing entry way of a single-family residenence.
Bernal Hill	2010.0306	10 Bernal Heights	Modify CU to install 5 dish antennas.
Billy Goat Hill	2006.0974	1700 DIAMOND ST	Demolish existing single-family home, subdivide existing parcel resulting in four new lots, and construct four new single-family homes.
Billy Goat Hill	2007.0679	290 BEACON ST	Renovation of front facade, construction of horizontal addition to either side of the existing second and third floors, construction of horizontal addition to the rear of the existing basement, second, and third floors, and construction of a new basement
Billy Goat Hill	2008.0041	527 29TH ST	Raise existing single-family residence from 24'-7" to 34'-4" in height. Create new 2-car tandem garage at lower level. Proposed addition of 1,422 sqft for a totla of 3,811 sqft.
Billy Goat Hill	2008.1218	70 GOLD MINE DR	Demolition of existing single-family residnece and detached garage. Proposed subdivision and construction of 4 residnetial units.
Billy Goat Hill	2009.1025	140 - 142 Laidley Street	Dwelling unit merger from 3 dwellings to 2 dwellings. Project inlcudes adding a garage and constructing additions to the cottage portion of the building.
Billy Goat Hill	2010.0876	631 29TH ST	Alteration of the roofline to crate more habitable space at the 2nd floor of the existing single-family building.
Billy Goat Hill	2010.1032	2329 CASTRO ST	Raise subject building by approx. 5ft to create gound level living space and storage space.
Billy Goat Hill	2010.0446	RPD-Billy Goat Hill	repair and replace landscaping at park.
Brooks Park	2008.0580	439 VERNON ST	Demo existing dwelling and construct a 2-story single-family dwelling with one off-street parking space.
Brooks Park	2008.0212	1101 JUNIPERO SERRA BL	Demolish existing gas station and construct 3 story mixed use project with 8 dwelling units.
Brooks Park	2009.0240	BOS 090319	Amend Planning Code Section 263.20 to allow special height exception for ground floor uses.
Brooks Park	2010.0621	314 RANDOLPH ST	New construction on vacant lot for new 8-unit residential building with a health center on the ground and first floors.
Buena Vista Park	2001.1056	280 DIVISADERO ST	3/20/04 - Determination that project may have significant effect on environment 6/26/03 - Environmental Evaluation filed Request for a Certificate of Appropriateness for effective demolition replacement carriage house, converted to residential unit.
Buena Vista Park	2005.0927	755 ASHBURY ST	Amend existing PUD; move house. Previous CATEX. AKA 36-38 DOWNEY
Buena Vista Park	2005.0555	CA Pacific Medical Center (CPMC)	California Pacific Medical Center - Four Campus Master Plan - (1) Cathedral Hill, (2) Pacific, (3) California, and (4) Davies Campuses. Revised Application (2/22/2008): CPMC Long Range Development Plan: (1) Cathedral Hill (reduced), (2) Pacific, (3)

Buena Vista Park	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Buena Vista Park	2008.1232	Int Moratorium Haight Paraphernalia	BOS 081380: Urgency Ordinance impsoing interim zoning moratorium prohibiting new tobacco paraphernalia shops in the Haight NCD, or Haight Street NC-1 or NC-2 for period of 45 days.
Buena Vista Park	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Buena Vista Park	2009.0811	1580 MASONIC AV	4th floor addition. 1st, 2nd, 3rd floor horizontal addition. Interior changes.
Buena Vista Park	2009.1003	1138 PAGE ST	Addition and alteration of existing 2-unit residence to proposed 4 unit, 4parking space residential building.
Buena Vista Park	2009.0269	RPD-Buena Vista Park Improvement	Trail extension, clearing and grubing, erosion control measures, small retaining walls and native plantings.
Buena Vista Park	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Buena Vista Park	2009.1170	37 - 39 LLOYD STREET (aka 35 LLOYD STREET)	Vacant lot and new construction of a 4- story, 2-unit residential building with 2 parking spaces.
Buena Vista Park	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.
Buena Vista Park	2010.0445	RPD-Corona Heights	Repair and replace existing landscaping.
Corona Heights	2005.0555	CA Pacific Medical Center (CPMC)	California Pacific Medical Center - Four Campus Master Plan - (1) Cathedral Hill, (2) Pacific, (3) California, and (4) Davies Campuses. Revised Application (2/22/2008): CPMC Long Range Development Plan: (1) Cathedral Hill (reduced), (2) Pacific, (3)
Corona Heights	2008.0430	2299 MARKET ST	Develop vacant lot with 34,477 sqft, 5-story, 50-foot high mixed-use building with ground floor retail, 18 residential units and a basement garage. Project includes a rear yard modification request.
Corona Heights	2008.1188	136 ORD ST	Historic resource determination
Corona Heights	2009.0269	RPD-Buena Vista Park Improvement	Trail extension, clearing and grubing, erosion control measures, small retaining walls and native plantings.
Corona Heights	2009.0811	1580 MASONIC AV	4th floor addition. 1st, 2nd, 3rd floor horizontal addition. Interior changes.
Corona Heights	2009.1097	2362 15TH ST	Addition/alteration to existing 4-unit building.
Corona Heights	2010.0445	RPD-Corona Heights	Repair and replace existing landscaping.
Corona Heights	2010.0634	75 CLIFFORD TR	Addition/alteration at front of single-family dwelling to add a new garage and reconfigure the existing bay window.
Dorothy Erskine Park	2008.0374	279 MONTEREY BL	Demoiltion of existing single-family residence.
Dorothy Erskine Park	2009.0652	125 CHILTON AV	Addition alteration to single-family dwelling.
Dorothy Erskine Park	2009.1098	75 VAN BUREN ST	863 sqft addition that includes a new bedroom, bathroom and a living room. Will remain a single-family dwelling.
Dorothy Erskine Park	2010.0391	1259 BOSWORTH ST(aka 701 CONGO ST)	Two-lot subdivision
Dorothy Erskine Park	2010.0587	185 CHILTON AV	Rear Yard and Exposure Variances to construct new one-story extension connecting front garage structure to rear dwelling unit.
Duncan-Castro	2006.0974	1700 DIAMOND ST	Demolish existing single-family home, subdivide existing parcel resulting in four new lots, and construct four new single-family homes.
Duncan-Castro	2006.1102	1409 SANCHEZ ST	Demolish existing single-family building and replace it with a new two units residential building. DR pursuant to Section 317 of the Code.
Duncan-Castro	2008.0041	527 29TH ST	Raise existing single-family residence from 24'-7" to 34'-4" in height. Create new 2-car tandem garage at lower level. Proposed addition of 1,422 sqft for a totla of 3,811 sqft.
Duncan-Castro	2008.1218	70 GOLD MINE DR	Demolition of existing single-family resident and detached garage. Proposed subdivision and construction of 4 residnetial units.
Duncan-Castro	2009.1019	1412 DIAMOND ST	1,131 sqft 3rd floor and rear addition to existing single-family residence.
Duncan-Castro	2010.0876	631 29TH ST	Alteration of the roofline to crate more habitable space at the 2nd floor of the existing single-family building.
Duncan-Castro	2010.1032	2329 CASTRO ST	Raise subject building by approx. 5ft to create gound level living space and storage space.
Edgehill Mountain	2009.0411	40 EDGEHILL WY	Demolition and construction of a new single-family residence.
Edgehill Mountain	2010.0156	1043 PORTOLA DRIVE	Vertical addition to existing 2-story building that includes strucutral upgrade and replacement and repair of existing windows and doors.
Everson Digby	2006.0076	538 LAIDLEY ST	To construct a two-story over garage single-family dwelling on a vacant lot. The previous dwelling on the lot was destroyed by fire, as a result, an emergency demolition was issued by the DBI, to demolish the bldg. in an RH-1 district.
Everson Digby	2006.0974	1700 DIAMOND ST	Demolish existing single-family home, subdivide existing parcel resulting in four new lots, and construct four new single-family homes.
Everson Digby	2006.0076	538 LAIDLEY ST	To construct a two-story over garage single-family dwelling on a vacant lot. The previous dwelling on the lot was destroyed by fire, as a result, an emergency demolition was issued by the DBI, to demolish the bldg. in an RH-1 district.
Everson Digby	2007.0679	290 BEACON ST	Renovation of front facade, construction of horizontal addition to either side of the existing second and third floors, construction of horizontal addition to the rear of the existing basement, second, and third floors, and construction of a new basement
Everson Digby	2008.0041	527 29TH ST	Raise existing single-family residence from 24'-7" to 34'-4" in height. Create new 2-car tandem garage at lower level. Proposed addition of 1,422 sqft for a totla of 3,811 sqft.
Everson Digby	2008.1218	70 GOLD MINE DR	Demolition of existing single-family resident and detached garage. Proposed subdivision and construction of 4 residnetial units.
Everson Digby	2009.0069	564 CHENERY ST	3-story fron addition to existing 2-story residnetial house.
Everson Digby	2009.1019	1412 DIAMOND ST	1,131 sqft 3rd floor and rear addition to existing single-family residence.
Everson Digby	2009.1098	75 VAN BUREN ST	863 sqft addition that includes a new bedroom, bathroom and a living room. Will remain a single-family dwelling.
Everson Digby	2009.1025	140 - 142 Laidley Street	Dwelling unit merger from 3 dwellings to 2 dwellings. Project inlcudes adding a garage and constructing additions to the cottage portion of the building.
Everson Digby	2010.0876	631 29TH ST	Alteration of the roofline to crate more habitable space at the 2nd floor of the existing single-family building.
Everson Digby	2010.1032	2329 CASTRO ST	Raise subject building by approx. 5ft to create gound level living space and storage space.
Everson Digby	2010.0446	RPD-Billy Goat Hill	repair and replace landscaping at park.
Fairmount Park	2006.0076	538 LAIDLEY ST	To construct a two-story over garage single-family dwelling on a vacant lot. The previous dwelling on the lot was destroyed by fire, as a result, an emergency demolition was issued by the DBI, to demolish the bldg. in an RH-1 district.

Fairmount Park	2007.0679	290 BEACON ST	Renovation of front facade, construction of horizontal addition to either side of the existing second and third floors, construction of horizontal addition to the rear of the existing basement, second, and third floors, and construction of a new basement
Fairmount Park	2009.0069	564 CHENERY ST	3-story fron addition to existing 2-story residnetial house.
Fairmount Park	2009.1025	140 - 142 Laidley Street	Dwelling unit merger from 3 dwellings to 2 dwellings. Project inlcudes adding a garage and constructing additions to the cottage portion of the building.
Fairmount Park	2010.0446	RPD-Billy Goat Hill	repair and replace landscaping at park.
Glen Canyon Park	2008.1218	70 GOLD MINE DR	Demolition of existing single-family residnece and detached garage. Proposed subdivision and construction of 4 residnetial units.
Glen Canyon Park	2009.1098	75 VAN BUREN ST	863 sqft addition that includes a new bedroom, bathroom and a living room. Will remain a single-family dwelling.
Glen Canyon Park	2010.0391	1259 BOSWORTH ST(aka 701 CONGO ST)	Two-lot subdivision
Glen Canyon Park	2010.0167	201 TERESITA BL	Vertical addition to existing single-family residence.
Golden Gate Heights	2009.0521	916 ORTEGA ST	2-story rear addition and a new 3rd floor. Remove non-confomring rear addition.
Golden Gate Heights	2009.0755	2021 16TH AV	Interior remodel, re-roof (flat to pitch), and change in entrance elevation.
Golden Gate Heights	2010.0930	PUC-Forest Hill Pump Station Upgrades Project	Demolition of the existing pump station and replacement with a new potable water pump station to meet current Building Code standards as an essential utility facility.
Golden Gate Heights	2010.0396	645 QUINTARA ST	Vertical addition to single-family residence to provide an additional two bedrooms. Would remain a single-faily residence.
Golden Gate Heights	2010.0384	2192 FUNSTON AVENUE	Vacant lot. New construction of a single-family 3,401 sqft, 40-foot high residential building.
Golden Gate Heights	2010.0181	2 QUINTARA ST	Lot Line Adjustment
Grandview Park	2009.0521	916 ORTEGA ST	2-story rear addition and a new 3rd floor. Remove non-confomring rear addition.
Grandview Park	2010.0264	RPD-Grandview Park Restoration Work	Repair existing retaining walls, restore trail, provide new protective fencing, provide soil erosion control measures, and native plant restoration.
Grandview Park	2010.0297	1770 16TH AV	3rd floor vertical addition to existing SFD setback 15-feet from front facade.
Hawk Hill	2009.0085	202 SAN MARCOS AV	To construct a three-story over garage single-family dwelling on a vacant lot.
Hawk Hill	2009.0085	160 SAN MARCOS AVENUE	To construct a three-story over garage single-family dwelling on a vacant lot.
Hawk Hill	2010.0930	PUC-Forest Hill Pump Station Upgrades Project	Demolition of the existing pump station and replacement with a new potable water pump station to meet current Building Code standards as an essential utility facility.
Hawk Hill	2010.0396	645 QUINTARA ST	Vertical addition to single-family residence to provide an additional two bedrooms. Would remain a single-faily residence.
Hawk Hill	2010.0384	2192 FUNSTON AVENUE	Vacant lot. New construction of a single-family 3,401 sqft, 40-foot high residential building.
Hawk Hill	2010.0181	2 QUINTARA ST	Lot Line Adjustment
India Basin Shoreline Park	2009.0919	1000 EVANS AV	Remediation work involving digging of three recovery trenches with lengths varying from 120 ft to 175 ft.
Interior Green Belt	2008.1087	1427 SHRADER ST	Horizontal and vertical addition; modification to the facade. Addiing one more unit.
Interior Green Belt	2009.0299	4963 17TH ST	Horizontal and vertical addition to existing 2-story single-family residence.
Interior Green Belt	2009.0487	200 BELGRAVE AV	Addition/Alteration to single-family residence.
Interior Green Belt	2009.0156	89 BELGRAVE AV	Lot line adjustment to divide one 7,500 sq.ft. lot into a 4,000 sq.ft. and 3,000 sq.ft. lot. Vertical and Horizontal Addition to existing single family residence of 1,300sf, resulting in a 4,200 sf single-family residence. New construction of a 4,000 sf
Interior Green Belt	2009.0568	AWSS SEISMIC & SYSTEM UPGRADES	Five pump station and tank retrofit/rebuild projects, part of AWSS program improvements.
Interior Green Belt	2009.0814	36 WOODLAND AV	Expand roof to livable space by adding 900 sf to an existing 2,800 sf single family home.
Interior Green Belt	2009.1152	Earthquake Safety & Emergency Response Bond	-Auxilliary Water Supply System -Critical Facilities and Infrastructure -Public Safety Building -Forensic Science Center Project Preliminary work for this DPW bond measure. Earthquake Safety and Emergency Response Bond. The Earthquake Safety and
Interior Green Belt	2009.0980	1560 SHRADER ST	Additon/alteration to single-family residence.
Interior Green Belt	2010.0351	5370 BELVEDERE ST	Rear addition and new doormers, raise the building 12", add new garage and driveway, and renovate kitchen, family room, master bedroom, bathrooms, and stairs.
Interior Green Belt	2010.0001	45 GRATTAN ST	NEW CONSTRUCTION. FRONT SETBACK VARIANCE
Kite Hill	2008.1178	1344 CLAYTON ST	Rear yard variance
Kite Hill	2008.1188	136 ORD ST	Historic resource determination
Kite Hill	2008.1191	358 DIAMOND ST	Raise existing 2,285 sqft 2-story house 5-feet in order to add 3-car garage at ground level. Add new driveway and curb cut, which will require removal of one street tree. Replace existing front stairs to accomdate increased height. Add 26 sqft addition a
Kite Hill	2008.0040	86 STANTON ST	Construction of 3,081 sqft, 25'-11" in height single-family residence with existing secondary structure. Parking provided on adjacent lot per ZA's letter of determination.
Kite Hill	2009.0196	117 DIAMOND ST	Adding expanded child care to existing school use for 13+ children
Kite Hill	2009.0568	AWSS SEISMIC & SYSTEM UPGRADES	Five pump station and tank retrofit/rebuild projects, part of AWSS program improvements.
Kite Hill	2009.0788	324 CASELLI AV	Interior improvements and vertical 3rd story addition.
Kite Hill	2009.0826	225 DOUGLASS ST	Interior renovations, front facade renovation, vertical 3rd story addition, horizontal rear addition and seismic upgrade.
Kite Hill	2009.1152	Earthquake Safety & Emergency Response Bond	-Auxilliary Water Supply System -Critical Facilities and Infrastructure -Public Safety Building -Forensic Science Center Project Preliminary work for this DPW bond measure. Earthquake Safety and Emergency Response Bond. The Earthquake Safety and
Kite Hill	2010.0005	4260 22ND ST	Remove asbestos shingles and replace with stucco and replace existing aluminum windows and front door.
Kite Hill	2010.0354	267 EUREKA ST	Enclose a protion of the front porch of an existing single-family residence.
Kite Hill	2010.1033	4226 22ND ST	Proposed addition to 2-unit dwelling.
Kite Hill	2010.0208	445 DOUGLASS ST	Addition/alteration to front primary facade of single-family residence. Would remain a single-family residence.
Kite Hill	2010.0372	479 DOUGLASS ST	Horizontal 3-story addition behind existing 3-story residence.

Kite Hill	2010.0598	75 MARS STREET	Addition/alteration to existing single-family dwelling to add a new residential unit, a new garage and exapnd all levels of existing building and a new vertical floor addition, rear yard variance required for rear addition that would extend to the rear p
Lake Merced	2008.0021	3711 19th Avenue (Parkmerced)	Master redevelopment program for 116-ac Parkmerced site, proposed to retain existing midrise bldgs and demo/replace all others w/ 4-14-story residential bldgs, on-site relocation of existing residents @ current rent-controlled rates, concurrent infrastru
Lake Merced	2008.1122	WSIP Groundwater Project B	SFPUC WSIP Groundwater Project B-- North Westside Basin local supply project. Would provide additional potable water supply using locally developed groundwater; construct six well stations, including three in GGP, and five miles of new distribution pipel
Lake Merced	2010.0099	PUC-Sunset Supply Pipeline Vegetation Clearing	Remove trees and vegetation around the Sunset Supply Pipeline.
Lakeview/Ashton	2009.0240	BOS 090319	Amend Planning Code Section 263.20 to allow special height exception for ground floor uses.
Lakeview/Ashton	2009.0297	239 MINERVA ST	Demolish existing 1-story substandard, non-comforming single-family resindece at rear of lot, lot line adjustment with lot 069, divide into 2 parcels and construct a single-family home on each site.
Lily Pond	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Lily Pond	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Lily Pond	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Lily Pond	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.
McLaren Park	2007.0389	228 RAYMOND AV	Two story horizontal addition in front requiring a front yard setback variance.
McLaren Park	2008.1050	191 TIOGA AV	Demolition of single family house (located on two lots) and garage (on a third lot). Construction of 3 single family homes on the three lots.
McLaren Park	2009.0307	555 MOSCOW ST	Horizontal addition for addtional guest room and study.
McLaren Park	2009.0756	469 RAYMOND AV	Demolish 1-story single-family residential building straddled in the middle of two lots and construct two single-family residential buildings on each lot.
McLaren Park	2009.1073	1200 BOWDOIN ST	Retaining wall between 1200 and 1208 Boudin Street.
McLaren Park	2010.0305	Sunnydale HOPE SF Master Plan	The project project is the Sunnydale HOPE SF Master Plan. The proposed project would demolish the existing Sunnydale public housing complexes and construct replacement housing, new market rate housing, infrastructure, open space, and community ammentitie
McLaren Park	2010.0863	Visitacion Valley Impact Fee	Amendments to the Planning Code Section 420.1-420.5: The Visitacion Valley Community Facilities and Infrastructure Fee and Fund [Board File No. 10-----]. Ordinance introduced by Supervisor Maxwell amending Planning Code Sections 420.1 (Findings), 420.2
McLaren Park	2010.0616	137 ARLETA AV	Horizontal/vertical addition to existing single-family residence to add a new garage. Would remain a single-family residence.
Mt. Davidson	2008.0558	795 FOERSTER ST	2 lot merger and 4 Lot subdivision, construction of 3 SFDs on three new lots
Mt. Davidson	2010.0167	201 TERESITA BL	Vertical addition to existing single-family residence.
Mt. Davidson	2010.0156	1043 PORTOLA DRIVE	Vertical addition to existing 2-story building that includes strucutral upgrade and replacement and repair of existing windows and doors.
Oak Woodlands	2006.0460	690 STANYAN ST	Demolish existing one-story retail and mezzanine containing approximately 23,600 sq. ft. and construct a new 62 unit residential structure with 34,400 sq. ft. of groundfloor retail. Two stories of underground parking would also be proposed for 176 total
Oak Woodlands	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Oak Woodlands	2008.1273	25 BALBOA ST	One story vertical addition over the existing two-story over garage and convert existing single-family dwelling to two family dwellings.
Oak Woodlands	2008.0395	2130 FULTON ST	Construction of a 4 story 59,900-sf University of San Francisco Teaching Building and Demolition of 17,000-sf of a Concrete Plaza,
Oak Woodlands	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Oak Woodlands	2009.1072	32 COLE ST	Remove and reaplce existing failing concrete retaining wall.
Oak Woodlands	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Oak Woodlands	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.
Oak Woodlands	2010.0014	226 CABRILLO ST	Demo existing single-family dwelling
Palou/Phelps	2003.1048	4800 Third St.	Proposal to build a mixed use project with 15 BMR DUs over commercial. Zoning Map changes for height and SUD for affordable housing. Requires PUD for exceptions to parking variance and rezoning.
Palou/Phelps	2007.1141	4701 03RD ST	Seismic retrofit and ADA access upgrades, balcony rehabilitiation, interior and exterior prep and paint, prescenium evaluation.
Palou/Phelps	2009.0304	SFPL-Bayview Branch Library	Demo and construction of a new Bayview Branch Library, R-Case: The project proposes to remove existing Bayview Anna E Waden Branch Library and the neighborhing storefront. The new library will be an approximately 9,000 square feet one-story building wit
Palou/Phelps	2009.0313	1911-1915 Quesada	Construction of two new single-family residences on two vacant lots.
Palou/Phelps	2010.1020	PUC-City Distribution Division Corp. Yard Fueling	PUC-City Distribution Division Corp. Yard Fueling Station.
Palou/Phelps	2010.0489	MTA-4701 03RD ST (Bayview Opera House Plaza)	Street and plaza improvements around the Bayview Opera House. No changes to the Opera building.
Palou/Phelps	2010.0199	PUC Southeast Water Pollution Control Plant	Proposed SEWPCP Medium Voltage Reliabilitity System Upgrad Project would remove and replace the existing 15kV electrical cables and would install new equipment.

Rock Outcrop	2009.0521	916 ORTEGA ST	2-story rear addition and a new 3rd floor. Remove non-confomring rear addition.
Rock Outcrop	2009.0755	2021 16TH AV	Interior remodel, re-roof (flat to pitch), and change in entrance elevation.
Rock Outcrop	2010.0264	RPD-Grandview Park Restoration Work	Repair existing retaining walls, restore trail, provide new protective fencing, provide soil erosion control measures, and native plant restoration.
Rock Outcrop	2010.0297	1770 16TH AV	3rd floor vertical addition to existing SFD setback 15-feet from front facade.
Strawberry Hill	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Strawberry Hill	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Strawberry Hill	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Strawberry Hill	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.
Tank Hill	2008.1087	1427 SHRADER ST	Horizontal and vertical addition; modification to the facade. Addiing one more unit.
Tank Hill	2008.1178	1344 CLAYTON ST	Rear yard variance
Tank Hill	2009.0299	4963 17TH ST	Horizontal and vertical addition to existing 2-story single-family residence.
Tank Hill	2009.0487	200 BELGRAVE AV	Addition/Alteration to single-family residence.
Tank Hill	2009.0156	89 BELGRAVE AV	Lot line adjustment to divide one 7,500 sq.ft. lot into a 4,000 sq.ft. and 3,000 sq.ft. lot. Vertical and Horizontal Addition to existing single family residence of 1,300sf, resulting in a 4,200 sf single-family residence. New construction of a 4,000 sf
Tank Hill	2009.0568	AWSS SEISMIC & SYSTEM UPGRADES	Five pump station and tank retrofit/rebuild projects, part of AWSS program improvements.
Tank Hill	2009.0788	324 CASELLI AV	Interior improvements and vertical 3rd story addition.
Tank Hill	2009.1152	Earthquake Safety & Emergency Response Bond	-Auxilliary Water Supply System -Critical Facilities and Infrastructure -Public Safety Building -Forensic Science Center Project Preliminary work for this DPW bond measure. Earthquake Safety and Emergency Response Bond. The Earthquake Safety and
Tank Hill	2009.0980	1560 SHRADER ST	Additon/alteration to single-family residence.
Tank Hill	2009.0870	125 CROWN TR	NEW CONSTRUCTION OF SINGLE-FAMILY DWELLNG. SEE 2008.1160D FOR DEMO.
Tank Hill	2010.0598	75 MARS STREET	Addition/alteration to existing single-family dwelling to add a new residential unit, a new garage and exapnd all levels of existing building and a new vertical floor addition, rear yard variance required for rear addition that would extend to the rear p
Tank Hill	2010.0351	5370 BELVEDERE ST	Rear addition and new doormers, raise the building 12", add new garage and driveway, and renovate kitchen, family room, master bedroom, bathrooms, and stairs.
Tank Hill	2010.0001	45 GRATTAN ST	NEW CONSTRUCTION. FRONT SETBACK VARIANCE
Twin Peaks	2008.0315	829 CORBETT AVENUE	Demolish existing single-family dwelling unit. No proposd plans.
Twin Peaks	2009.0324	21 FOUNTAIN ST	Addition/Alteration of existing single-family.
Twin Peaks	2009.0446	60 FOUNTAIN ST	Rear yard variance for the construction of a new single-family building at rear of site.
Twin Peaks	2009.0568	AWSS SEISMIC & SYSTEM UPGRADES	Five pump station and tank retrofit/rebuild projects, part of AWSS program improvements.
Twin Peaks	2009.0870	125 CROWN TR	NEW CONSTRUCTION OF SINGLE-FAMILY DWELLNG. SEE 2008.1160D FOR DEMO.
Twin Peaks	2009.1152	Earthquake Safety & Emergency Response Bond	-Auxilliary Water Supply System -Critical Facilities and Infrastructure -Public Safety Building -Forensic Science Center Project Preliminary work for this DPW bond measure. Earthquake Safety and Emergency Response Bond. The Earthquake Safety and
Twin Peaks	2010.0375	20 HOFFMAN AV	The proposed project is a vertical addition to alter the existing pitched roof.
Twin Peaks	2010.0725	70 CRESTLINE DR	Vacant lot/Split lot from larger lot and construct 4-unit residential building.
Whiskey Hill	2008.0775	1000 GREAT HY- 811 Stanyan St	Seismic upgrade of building and infrastructure and code improvments. No changes to building envelope.
Whiskey Hill	2008.0845	SF BOTANICAL GARDEN	SF Botanical Garden, in Golden Gate Park, to replace two greeenhouses, total of 6,960-sf, with 13,000-sf Center for Sustainable Gardening, 1-story, replace 10 parking spaces, remove a number trees for enlarged building footprint, terraced growing areas a
Whiskey Hill	2009.0419	Japanese Tea Garden	Alterations to the Tea House and Gift Shop repair and rehabilitation of exterior finishes of tea house and gift shop, kitchen remodel,lighting modifications tea sipping and preparation, retail concession
Whiskey Hill	2010.0016	RPD-Golden Gate Park Beach Chalet Soccer Fields	Replace four existing turf fields with new artifical turf and add new park amenities such as benches, bleachers, picnic tables, bbq pits, new maintenance shed, new pedestrian pathways, etc.

Other SF Projects

Name	Description
Sharp Park Recycled Water Project	Construction and operation of recycled water pump station, storage tanks, and pipelines near Sharp Park; pipelines would be installed through Sharp Park; construction scheduled for 2009 (project on hold)
Westside Recycled Water Project	Construction and operation of recycled water facility and pipelines; construction scheduled for 2011-2014
Harding Park Recycled Water Project	Construction and operation of a recycled water storage tank and distribution pipeline near Lake Merced; construction scheduled for 2009-2010
San Andreas Pipeline No. 3	Installation and operation of approximately 23,400 feet (4.4 miles) of new pipeline to extend the existing pipeline from the San Pedro Valve Lot in Daly City to Merced Manor Reservoir in San Francisco; installation scheduled for 2009-2011

UC San Francisco Mount Sutro Open Space Reserve	UCSF would conduct fire mitigation (forest thinning) projects on two parcels of 6 and 8 acres within the 61-acre reserve
San Francisco State University Master Plan	Development of the campus from 2009 through 2020 to accommodate an increased enrollment ceiling of 25,000 full-time students. Current full time student enrollment is 20,000. The campus master plan would result in a net increase in academic and academic support building space of 900,000 gross square feet.
SFRPD Trails Program	Trail improvements under the Clean and Safe Neighborhood Parks Bond
SFRPD Forestry Program	Tree planting and restoration under the Clean and Safe Neighborhood Parks Bond
SFRPD Horseshoe Courts	Create horseshoe courts at Oak Woodlands
SFRPD Bike Skills Area	Create bike skills area at McLaren Park
SFRPD disc golf course	Create disc golf course at McLaren Park
GGNRA Dog Management Plan	Changes in dog management measures at 21 properties within the Golden Gate National Recreation Area (including Fort Mason, Crissy Field, Fort Point, Baker Beach, Fort Miley, Lands End, Sutro Heights Park, Ocean Beach, and Fort Funston in San Francisco) (including Mori Point, Milagra Ridge, Sweeney Ridge, and Pedro Point Headlands in San Mateo County)
Candlestick Point-Hunters Point Shipyard Phase II Development	Development of 10,500 residential for 24,465 residents; 885,000 gross square feet (gsf) of retail; 150,000 gsf of office; 2.5 million gsf of Research & Development (R&D) uses; a 220-room, 150,000 gsf hotel; 255,000 gsf of artist live/work space; 100,000 gsf of community services; 300-slip maringa; 251.3 acres of new parks, sports fields, and waterfront recreation areas, as well as 84 acres of new and improved State parkland; a 69,000-seat 49ers stadium; and a 75,000 gsf performance arena. The permanent employee population associated with the project would be 10,730. Project area extends from India Basin to Candlestick Cove.

Pacifica Related Cumulative Projects List

Residential Development	Projects totaling 261 units on an estimated 150 acres
Commercial Development	Projects totaling about 85,000 square feet of building space

APPENDIX H

Air Quality

TETRA TECH

CEQA AIR QUALITY TECHNICAL REPORT

FOR THE

SAN FRANCISCO NATURAL AREAS MANAGEMENT PLAN

Prepared by

Tetra Tech, Inc.

August 2011

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ACRONYMS AND ABBREVIATIONS

ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards (CAAQS)
CO	Carbon monoxide
CO_2	Carbon dioxide
EPA	Environmental Protection Agency
GHG	Greenhouse gas
HARP	Hot Spots Analysis Reporting Program
HI	Hazardous Index
H_2S	Hydrogen sulfide
HRA	Health Risk Assessment
ISCST	Industrial Source Code Short Term
Lbs	Pounds
Mph	miles per hour
MT	Metric tons
NAAQS	National Ambient Air Quality Standards
NO	Nitric oxide
NO_2	Nitrogen dioxide
NOx	Nitrogen oxides
OEHHA	Office of Environmental Health and Hazard Assessment
O&M	Operating and maintenance
O_3	Ozone
Pb	Lead
PM_{10}	fine particulate matter equal to or less than 10 microns
$PM_{2.5}$	fine particulate matter equal to or less than 2.5 microns
ROG	Reactive organic gas
SFRPD	San Francisco Recreation and Park Department
SCAQMD	South Coast Air Quality Management District
SO_2	Sulfur dioxide
TACs	Toxic air contaminants
TSP	Total suspended particulate
URBEMIS	Urban Emissions Program

SECTION 1

PROJECT DESCRIPTION

The San Francisco Recreation and Park Department (SFRPD) proposes to implement the Significant Natural Resource Areas Management Plan at 32 Natural Areas in San Francisco and Pacifica. The largest individual project proposed under that plan is restoration of the wetland at Sharp Park located in Pacifica. The air quality analysis presented in this report analyzes the potential air quality impacts associated with the proposed restoration project. The estimated emissions from that project represent the highest level of emissions anticipated under the plan; this analysis serves as a guide for the anticipated emissions associated with other plan activities.

1.1 Project Location

The proposed project is to restore the wetland at Sharp Park located in the city of Pacifica, County of San Mateo, California. Sharp Park is one of the largest SFRPD parks and is surrounded by significant open spaces. The park borders the Pacific Ocean and is bisected by Highway 1. The Sharp Park Golf Course and Laguna Salada are on the western side of Highway 1. Mori Point borders the southwestern edge, and Sweeney Ridge borders the park on the southeastern and eastern edges. The northern side of Sharp Park is bordered by undeveloped areas within the cities of Pacifica and San Bruno. The Natural Area accounts for 237.2 acres within Sharp Park and encompasses the upper canyon areas, portions of Sanchez Creek, and the Laguna Salada wetlands and associated vegetation.

The proposed project is in the area under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). BAAQMD is the public agency entrusted with regulating stationary sources of air pollution in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties.

1.2 Proposed Project Description

Following are the proposed main activities to restore the wetland at Sharp Park:

- Dredging to remove sediment and decaying vegetation in Laguna Salada, Horse Stable Pond, and the channel that connects the two water bodies;
- Re-contouring the shoreline to create shallow water habitat;
- Creating a habitat corridor between Horse Stable Pond and Laguna Salada;

- Creating an upland peninsula in the middle of the lagoon to provide snakes and frogs with refugia from feral cats and other predators; and

- Constructing upland mounds on the east side of the lagoon and between Laguna Salada and Horse Stable Pond.

1.3 Types and Sources of Air Pollutants

There are three major sources of emissions for this project:

- Fugitive dust emissions – Dust is generally associated with excavation, windblown unpaved areas, vehicle and equipment travel on unpaved roads, and dirt/debris pushing. Dust generated during construction activities would vary substantially depending on the level of activity, the specific operations, and weather conditions;

- Construction Equipment – Construction requires use of heavy-duty equipment, such as bulldozers, excavators, loaders, etc. Exhaust emissions from this equipment during construction activities would vary daily as activity levels change; and

- Vehicles – Transport vehicles travelling to and from the site, including delivery trucks hauling materials and automobiles carrying workers, generate exhaust emission.

SECTION 2

PROJECT SETTING

2.1 Sources and Receptors

The emission sources for this project include: fugitive dust from site excavation, exhaust form construction equipment and exhaust from vehicles. The BAAQMD California Environmental Quality Act (CEQA) Air Quality guidelines require that air quality impact shall be assessed for receptors located within 1,000 feet of a project. These nearby receptors include residents, businesses, schools, churches, and hospitals. Figure 1 shows the emissions sources and the receptors within 1,000 feet of the proposed project. The area within 1,000 feet of the emissions source is often referred to as the zone of impact. The zone of impact is depicted as a circle on Figure 1. The nearest receptor is the golf course located east of the site where major construction activities will occur.

2.2 Existing Air Quality Standards

In California, local responsibility for air quality is assigned to air quality management districts and air pollution control districts. The project site is located in San Mateo County, which is under the jurisdiction of the BAAQMD. The impact analysis contained in this section was prepared according to the methodologies provided by the BAAQMD [Ref. 1].

The Federal Clean Air Act (42 USC Section 7401-7671q; CAA) requires the adoption of the National Ambient Air Quality Standards (NAAQS) to protect the public health and welfare from the effects of air pollution. Current standards are set for sulfur dioxide (SO_2), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), fine particulate matter equal to or less than 10 microns (PM_{10}), fine particulate matter equal to or less than 2.5 microns ($PM_{2.5}$), and lead (Pb). These pollutants are called criteria air pollutants. The State of California Air Resources Board (ARB) has established additional standards for criteria air pollutants that are generally more restrictive than the NAAQS. National and state standards are shown in Table 1 [Ref. 2].

The project site is located within the jurisdiction of the BAAQMD. The mission of the BAAQMD is to attain and maintain NAAQS and California Ambient Air Quality Standards (CAAQS) and to ensure air pollutants do not pose a nuisance or significant public health threat.

2.3 Climate

Air quality in the project area is not only affected by various emission sources (mobile, industry, etc.) but also by atmospheric conditions such as wind speed, wind direction, temperature, and rainfall, etc.

The climate near the proposed project features mild and wet winters and cool summers with frequent fog or wind. The lowest winter temperatures ranged from 36°F to 23°F (2°C to –5°C). The lowest temperature on record ranges from 30°F to 20°F (–1°C to –7°C). The average highest temperature ranges from 104°F to 116°F (40°C to 47°C).

The BAAQMD maintains a meteorological station near the proposed project (Fort Funston Meteorological Station). The station is located approximately 10 miles north of Sharp Park. Review of the wind data collected at this station shows that the prevailing wind is from the southwest with an average wind speed of 8 knots. Figure 2 shows the windrose plot.

2.4 Air Pollutant Constituents and Attainment Status

The following describes the criteria air pollutants and their attainment status in the Bay Area Air Basin. A state or region is given the status of "attainment" or "unclassified" if ambient air quality standards have not been exceeded. A status of "nonattainment" for particular criteria air pollutants is assigned if the ambient air quality standard for that pollutant has been exceeded. Once designated as nonattainment, attainment status may be achieved after three years of data showing non-exceedance of the standard. When an area is reclassified from nonattainment to attainment, it is designated as a maintenance area, indicating the requirement to establish and enforce a plan to maintain attainment with the standard.

Table 2 presents the air quality attainment status of the Bay Area Air Basin. The Bay Area is classified "attainment" for all of the national standards with the exception of ozone. It is classified "non-attainment" for state standards for ozone and particulate matters (PM_{10} and $PM_{2.5}$). Following is a brief description of the criteria air pollutants.

Ozone

Ozone results from chemical reaction of nitrogen oxides and reactive organic gases under sunlight influence. Ozone is a problematic air contaminant in the Bay Area Air Basin. Maximum ozone concentrations usually are recorded during summer months. The BAAQMD measured ambient air data show that state and national ozone air quality standards were exceeded approximately 32 days in 2009 [Ref. 3]. Under both national and state standards, the area is classified as nonattainment area for ozone.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a product of fuel combustion, during which the nitrogen in the air is converted to nitrogen dioxide (NO_2) and nitric oxide (NO). The combination of NO_2 and NO is collectively known as nitrogen oxides (NOx). The BAAQMD measured ambient air data show that state and national NO_2 air quality standards were not exceeded in 2009 [Ref. 3]. Under both national and state standards, the area is classified as attainment area for NO_2.

Carbon Monoxide

Carbon monoxide (CO) is a product of inefficient combustion, principally from automobiles and other mobile sources of pollution. CO reduces the oxygen-carrying capacity of the blood and in high concentrations can cause death. At lower concentrations, people exposed experience dizziness and headaches. The BAAQMD measured ambient air data show that state and national CO air quality standards were not exceeded in 2009 [Ref. 3]. Under both national and state standards, the area is classified as attainment area for CO.

Sulfur Dioxide

Sulfur dioxide (SO_2) is produced when any sulfur-containing fuel is burned. Chemical plants that treat or refine sulfur or sulfur-containing chemicals also emit SO_2. Because of the complexity of the chemical reactions that convert SO_2 to other compounds (such as sulfates), peak concentrations of SO_2 occur at different times of the year in different parts of the state, depending on local fuel characteristics, weather, and topography. SO_2 can cause bronchia constriction and may aggravate respiratory diseases. In moist environments, SO_2 may combine with water to form sulfuric acid, a component of acid deposition. The BAAQMD measured ambient air data show that state and national SO_2 air quality standards were not exceeded in 2009 [Ref. 3]. Under both national and state standards, the area is classified as attainment area for SO_2.

Fine Particulates (PM_{10}, $PM_{2.5}$)

Particulate matter in the air is composed of windblown fugitive dust; particles emitted from combustion sources (usually carbon particles); and organic, sulfate, and nitrate aerosols formed in the air from emitted hydrocarbons, sulfur oxides, and oxides of nitrogen. In 1984, the ARB adopted standards for fine particulate (PM_{10} - particulate matter of less than 10 microns), and phased out the total suspended particulate (TSP) standards used up to that time. PM_{10} standards were substituted for TSP standards because PM_{10} corresponds to the size range of inhalable particulate related to human health. In 1987, Environmental Protection Agency (EPA) also replaced national TSP standards with PM_{10} standards. In July 1997, the EPA adopted new standards for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$).

Particulates are a public health and welfare concern for several reasons. Particulates may be intrinsically toxic because of their inherent chemical and/or physical characteristics. Particulate matter may interfere with one or more of the mechanisms that normally clear the respiratory tract. Finally, fine particulates, which are easily carried deep into the lungs, may act as carriers of absorbed toxic substances. Thus elevated particulate concentrations may exacerbate pre-existing respiratory diseases such as bronchitis. Particulate matter, especially fine particulates, also interferes with visibility. The BAAQMD measured ambient air data show that state PM_{10} air quality standards were exceeded on 1 day in 2009 [Ref. 3]. The national $PM_{2.5}$ air quality standards were exceeded on 11 days in 2009 [Ref. 3].

Lead

Lead is found in old paints and coatings, plumbing, and various other materials. Once in the blood stream, lead can cause damage to the brain, nervous system, and other body systems. Children are highly susceptible to the effects of lead.

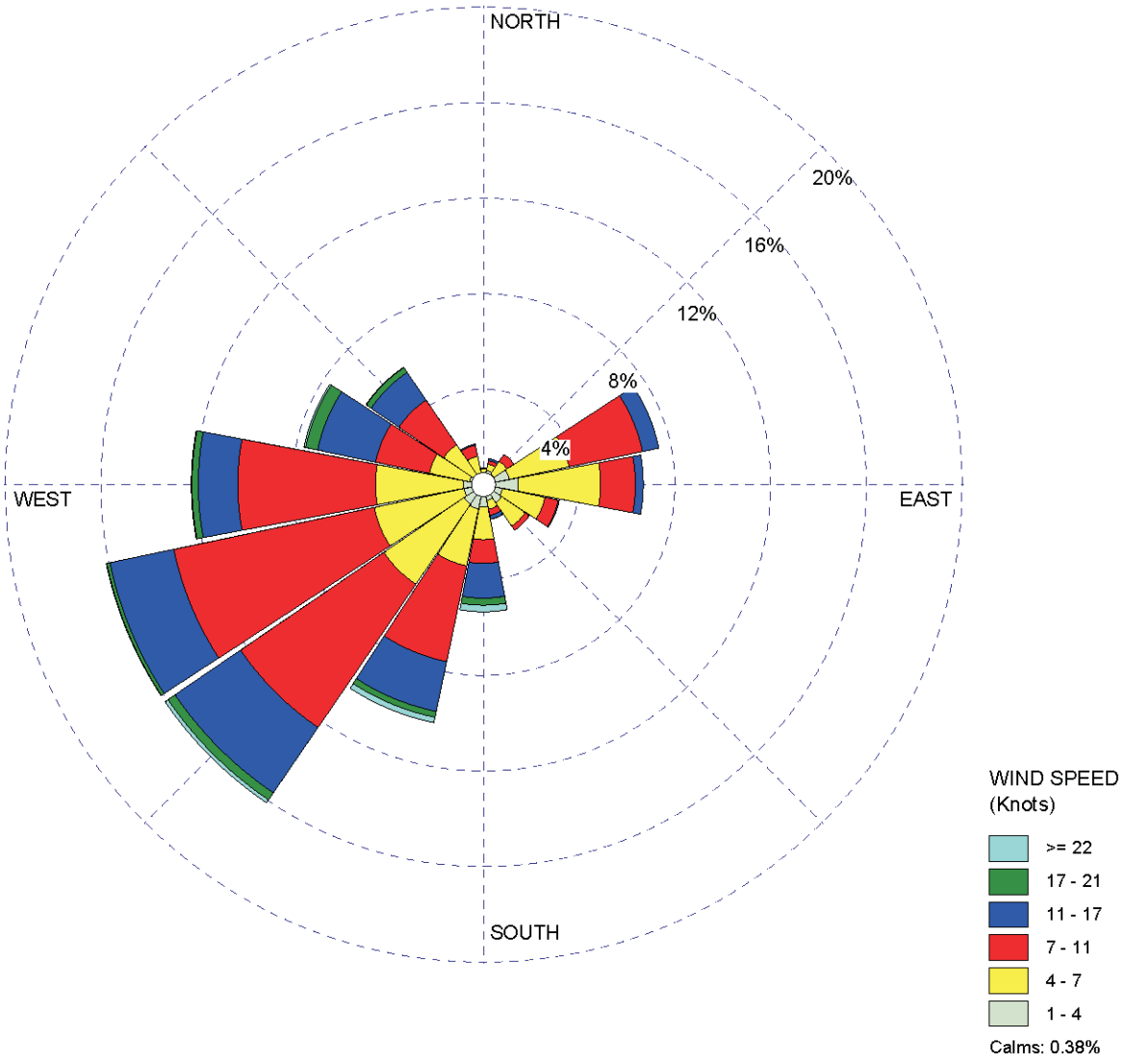
Figure 1. Emissions Sources and Receptors Within 1,000 Feet

WIND ROSE PLOT:

Figure 2. Windrose Plot

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD: **2005** **Jan 1 - Dec 31** **00:00 - 23:00**	COMPANY NAME: **Tetra Tech, Inc.**	
	CALM WINDS: **0.38%**	TOTAL COUNT: **8760 hrs.**	
	AVG. WIND SPEED: **8.16 Knots**		PROJECT NO.:

Table 1. State and National Air Quality Standards

Pollutant	Averaging Time	California Standards [1] (Concentration) [3]	National Standards [2]	
			Primary [3,4]	Secondary [3,5]
Ozone (O_3)	1 Hour	0.09 ppm	-	
	8 Hour	0.07 ppm	0.08 ppm [6]	0.08 ppm
Particulate Matter (PM_{10})	24 Hour	50 µg/m^3	150 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3		50 µg/m^3
Particulate Matter ($PM_{2.5}$)	24 Hour		35 µg/m^3	
	Annual Arithmetic Mean	12 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	8 Hour	9 ppm	9 ppm	
	1 Hour	20 ppm	35 ppm	
	8 Hour (Lake Tahoe)	6 ppm		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.03 ppm	0.053 ppm	
	1 Hour	0.18 ppm	0.1 ppm	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean		0.03 ppm	
	24 Hour	0.04 ppm	0.14 ppm	
	3 Hour			
	1 Hour	0.25 ppm		
Lead [7]	30 Day Average	1.5 µg/m^3		
	Calendar Quarter		1.5 µg/m^3	1.5 µg/m^3
Visibility Reducing Particles [8]	8 Hour	See footnote 8		
Sulfates	24 Hour	25 µg/m^3		
Hydrogen Sulfide	1 Hour	0.03 ppm		
Vinyl Chloride [7]	24 Hour	0.01 ppm		

µg/m^3 – micrograms per cubic meter
ppm – parts per million

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter (PM_{10}, $PM_{2.5}$) and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

3. Concentration expressed first in units in which it was promulgated; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect public health.

5. National Secondary Standards: The levels of air quality necessary to protect public welfare from any known or anticipated adverse effects of a pollutant.

6. New National 8-hour ozone and fine particulate matter standards were promulgated by EPA on July 18, 1997.

7. The ARB has identified lead and vinyl chloride as toxic air contaminants with no threshold level of exposure for adverse health effects determined. These actions allow for implementing control measures at levels below the ambient concentrations specified for these pollutants.

8. Extinction coefficient of 0.23 per kilometer, visibility of ten miles or more (0.07 – 30 miles or more for Lake Tahoe) due to particulates when relative humidity is less than 70 percent.

Table 2. Criteria Air Pollutant Attainment Status in the Bay Area

Air Pollutants	State	National
Ozone (1-Hour)	Non-attainment	N/A
Ozone (8-Hour)	Non-attainment	Non-attainment
$PM_{2.5}$	Non-attainment	Non-attainment
PM_{10}	Non-attainment	Unclassified
NO_2	Attainment	Unclassified/Attainment
CO	Attainment	Attainment
SO_2	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	Attainment	N/A
Hydrogen Sulfide	Unclassified	N/A
Visibility Reducing Particles	Unclassified	N/A

Source: BAAQMD 2010 [Ref. 2].

N/A – not applicable

SECTION 3

THRESHOLDS OF SIGNIFICANCE

This section describes the air quality significant thresholds established by the BAAQMD. Section 4 presents the methodologies used to determine the air quality impacts associated with the proposed project and the actual air quality impacts using these methods.

For purposes of meeting national requirements, impact significance is related to conformance with the EPA-approved State Implementation Plan (SIP) and with the NAAQS. Air quality impacts would be significant if they exceed these standards or contribute to non-conformance. BAAQMD has published thresholds of significance for air quality, as shown in Table 3.

A project has a significant air quality impact if it does one of the following:

1. Generates total emissions that exceed the thresholds shown in Table 3; and/or

2. Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1, or annual average $PM_{2.5}$ emissions above 0.3 $\mu g/m^3$.

A project with significant impacts must incorporate mitigation sufficient to reduce its impact to a level that is not significant. A project that cannot be mitigated to a level that is not significant must incorporate all feasible mitigation.

Table 3. Thresholds of Significance

Criteria Air Pollutants	Construction-Related	Operational-Related	
	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/day)	Maximum Annual Emissions (tons/yr)
ROG	54	54	10
NOx	54	54	10
PM_{10}	82 (exhaust only)	82	15
$PM_{2.5}$	54 (exhaust only)	54	10
CO	None	9 ppm (8-hr average), 20 ppm (1-hr average)	
SOx	None	None	None
GHGs (stationary sources)	None	10,000 MT/yr	
GHGs (non-stationary sources)	None	Compliance with Qualified GHG Reduction Strategy Or 1,100 MT of CO_2e/yr Or 4.6 MT CO_2e /yr (residents and employees)	
Health Risk (Individual Project)	Same as Operational-related Thresholds	Cancer Risk < 10 in a million, Chronic Index <1, Acute Index <1, Ambient $PM_{2.5}$ < 0.3 ug/m^3 annual average, Zone of Impact = 1,000 feet from fence line	
Health Risk (cumulative)	Same as Operational-related Thresholds	Cancer Risk < 100 in a million, Chronic Index <10, Acute Index <10, Ambient $PM_{2.5}$ < 0.8 ug/ m^3 annual average (from all local sources), Zone of Impact = 1,000 feet from fence line	

CO_2e – carbon dioxide equivalent
GHG – greenhouse gas
lbs – pounds
MT – metric ton
ROG – reactive organic gas
yr – year

SECTION 4

CRITERIA AIR POLLUTANT EMISSIONS

This section presents the methodologies used to determine the types and quantities of the criteria air pollutant emissions and their impacts associated with the proposed Sharp Park restoration project.

4.1 Methodology

4.1.1 Construction Emissions

Air quality impacts associated with the proposed project are related to emissions that would occur during construction and subsequent operation of the proposed project. The principal sources of pollutants during construction would be the earth-moving activities, construction equipment, trucks bringing materials to site, and construction crew commuting vehicles. The sources of pollutants during project operations would be limited to the vehicles and equipment used by the operations and maintenance staff.

There are many air quality modeling tools available to assess air quality impacts of the project. Construction emissions were estimated based on the air emission modeling software package, ARB's URBEMIS 2007 [Ref. 4]. The model selection is consistent with the BAAQMD CEQA guidelines. The model contains data specific for each California air basin.

Construction is typically conducted in phases. The URBEMIS 2007 model divides construction into demolition, mass site grading, fine site grading, trenching, building construction, architectural coating, and paving phases. These model settings can be modified to fit applicable features of a specific project. For this project, the following construction phases are assumed:

- Barrier Installation and Ponds Dewatering
- Excavation and Grading
- Culvert Placement and Excavation
- Revegetation
- Rifle Range Excavation

Each construction phase can generate the following: (1) fugitive dust emissions resulting from soil disturbance activity; (2) emissions of air pollutants from fuel combustion in construction equipment; and (3) emissions of air pollutants from fuel combustion in vehicles used for worker commuting and material hauling and construction debris disposal.

Construction activities consist of wetland restoration activities in the Sharp Park area, west of Highway 1. The project is located in a coastal wetland which is currently home to several endangered species. The endangered species located on-site are migratory in nature and generally not present at Sharp Park from September to October each year..

The air quality impact analyses are conducted based on the assumption that construction activities would be conducted in a single year between May 1 and October 15. A summary of the quantitative construction activity information and assumptions used for the modeling analysis is provided in Appendix A

4.1.2 Operational-Related Emissions

Planned maintenance activities during the operation phase could result in emissions. However, because proposed operations are expected to be substantially similar to current operations, negligible changes are anticipated in the operation emissions. As a result, these operation emissions are not expected to exceed the BAAQMD significance thresholds and are not quantified.

4.2 Results of Analysis

4.2.1 Project Level

Table 4 shows the URBEMIS model output summary. Criteria air pollutant emissions from construction activities were compared to the June 2010 BAAQMD CEQA significance thresholds. As shown in Table 4, construction criteria air pollutant emissions would exceed the BAAQMD threshold for NOx, and mitigation measures would be required. Appendix A provides the complete URBEMIS files, including construction assumptions, schedules, types and quantities of equipment, model input and output files.

4.2.2 Cumulative

The BAAQMD considers projects that result in a significant criteria air pollutant or ozone precursor impact to also result in a cumulatively considerable contribution to criteria air pollutants or ozone precursors.

4.3 Mitigation Measures

The project will be required to implement all feasible mitigation measures to reduce NOx emissions.

Following are the mitigation measures considered for NOx emissions reduction:

1. For any Sharp Park restoration activities between 2011 and 2015, use Tier 3 equipment with best available control technology where feasible. For programmatic projects conducted after 2015, use Tier 4 equipment or interim Tier 4 equipment equipped with best available control technology where such equipment exists.

2. Use temporary power provided by the Pacific Gas & Electric Company instead of diesel generators; where it is not possible to plug into the electric grid, use Tier 3 diesel generators and air compressors.

3. Use concrete batched from local plants to limit concrete trucks' travel time and the amount of diesel exhaust emitted.

4. Minimize idling times by either shutting equipment and vehicles off when not in use or limiting the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Provide clear signage for construction workers regarding idling rules at all access points.

5. Use on-road haul trucks model year 2007 or later.

6. Maintain and properly tune construction equipment in accordance with manufacturer's specifications. Have all equipment checked by a certified mechanic to determine that equipment is running in proper condition prior to operation.

There are commercially available post-combustion NOx emission control technologies, including selective catalytic reduction (SCR) system, selective non-catalytic reduction (SNCR) system, and NOxTECH. These technologies can reduce NOx emissions by up to 90 percent. However, they are more suitable for stationary equipment and have not been demonstrated and proven to operate effectively in mobile construction equipment. In summary, the proposed mitigation measures would reduce NOx emissions but not substantially. Using Tier 3 or similar engines would be the most effective way to reduce NOx emissions; however, it is not likely to reduce emissions below the significance threshold.

For dust control mitigation, the San Francisco Construction Dust Ordinance requires that all site preparation work, demolition, or other construction activities that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil must comply with specified dust control measures. For project sites greater than half an acre in size, the Ordinance requires that a Dust Control Plan be prepared and approved by the San Francisco Health Department. The SFRPD would be required to comply with the Ordinance and submit a Dust Control Plan for the Sharp Park restoration project and many of the programmatic projects.

In addition, BAAQMD fugitive emissions rule requires that fugitive dust be controlled with best available control measures so that the presence of such dust does not remain visible in the atmosphere beyond the property line of the emission source. The BAAQMD fugitive emissions rule requires implementing dust suppression techniques to prevent fugitive dust from creating an off-site nuisance. Implementing these dust suppression techniques will reduce the fugitive dust generation (and thus the PM_{10} component). Compliance with these rules would reduce impacts on nearby sensitive receptors. Applicable dust suppression techniques include the following:

1. Water active sites. Locations where grading is to occur will be watered before earth moving activities;

2. All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard in accordance with the requirements of California Vehicle Code (CVC) section 23114 (freeboard means vertical space between the top of the load and top of the trailer);

3. Traffic speeds on all unpaved roads shall be reduced to 15 miles per hour or less.

The San Francisco Dust Control Ordinance includes these dust suppression requirements.

4.4 Summary of Project's Criteria Air Pollutant Impacts

In summary, the air quality analysis concludes that the project would result in NOx emissions that exceed the significant thresholds established by the BAAQMD. During the long-term operation of the project, all criteria air pollutant emissions are expected to be similar to current emissions levels.

Because construction-related NOx emissions exceed the BAAQMD significance threshold, the project would also be considered to result in a considerable contribution to cumulative ozone precursor emissions.

Table 4. CEQA Thresholds of Significance for Construction Emissions Versus Estimated Sharp Park Construction Emissions

	Average Daily ROG, lbs/day	**Average Daily NOx, lbs/day**	**Average Daily PM_{10}, lbs/day**	**Average Daily $PM_{2.5}$, lbs/day**	**GHGs, CO_2e (MT/year)**
BAAQMD Threshold for Construction Emissions	54	54	82 (exhaust only)	54 (exhaust only)	None for construction
Sharp Park Construction Emissions	13	153	3.4 (exhaust only)	3.1(exhaust only)	1,630
Exceed Threshold?	No	YES	No	No	NA

NA = Not Applicable

SECTION 5

GREENHOUSE GAS EMISSIONS

This section presents the methodologies used to determine the types and quantities of the greenhouse gas (GHG) emissions and their impacts associated with the proposed Sharp Park restoration project.

5.1 Methodology

5.1.1 Construction Emissions

The BAAQMD does not have an adopted quantitative threshold of significance for construction-related GHG emissions. However, BAAQMD recommends that construction-related GHG emissions be quantified and that the project opponent make a determination on the significance of these construction-generated GHG emission impacts.

For this project, the sources of GHG are the fuel combustion in construction equipment, in vehicles used to haul materials and vehicles used by worker commuting to/from the site.

There are three types of GHG from fuel combustion, including carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O). GHG emissions are presented as carbon dioxide equivalents (CO_2e). CO_2e is computed based on global warming equivalence. The CH_4 global warming equivalence is 21 times that of CO_2, and the N_2O global warming equivalence is 310 times that of CO_2.

Mathematically, the CO_{2e} can be represented by the following equation:

CO_{2e} Emissions = CO_2 Emissions + 21 x CH_4 Emissions + 310 x N_2O Emissions

The BAAQMD has developed a GHG emission calculation tool (BGM Model). However, this model can only be used to estimate operation-related GHG emissions. Therefore, the URBEMIS model was used to estimate the GHG emissions during the construction phase of the proposed project.

5.1.2 Operation Emissions

Planned maintenance activities during the operation phase could result in GHG emissions. However, because proposed operations are expected to be substantially similar to current operations, negligible changes are anticipated in the operation emissions. As a result, these operation GHG emissions are not expected to exceed the BAAQMD significance thresholds and are not quantified.

5.2 Results of Analysis

5.2.1 Project Level

Tetra Tech used the URBEMIS model to estimate the GHG emissions during the construction phase of the project. Based on the construction schedule, types and quantities of construction equipment, and numbers of haul trucks, etc., Tetra Tech estimated that the maximum CO_2 emissions would be 21,777 pounds per day. Table 4 shows the calculation result.

The URBEMIS model provides a CO_2 profile only and does not quantify CO_2e, CH_4 and N_2O emissions. Tetra Tech assumes that the CO_2 emissions of 21,777 pounds per day are CO_2e. Justification of the assumption is as follows: For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are:

(1) CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed,
(2) CH_4 emission factors are 0.065 pounds of CO_2e per gallon consumed, and
(3) N_2O emission factors are 0.068 pounds of CO_2e per gallon consumed.

As shown in these emission factors, the CO_2 profile is 99 percent of the total GHG generated in combustion equipment. Therefore, Tetra Tech assumes that the CO_2 emissions of 21,777 lbs per day represent the CO_2e levels.

The current BAAQMD CEQA guidelines have no quantitative GHG emissions significance threshold for construction. This GHG quantification is presented for information purpose only. The Sharp Park wetland restoration project has average CO_2e emissions of 21,777 lbs per day, which are converted to 3,593,205 pounds based on 5.5 months per one year of construction activities. This annual emission profile converts to 1,630 MT.

5.2.2 Cumulative

The impacts of climate change are the cumulative result of GHG emissions and therefore a project-level analysis of GHG emissions is also considered an analysis of a project's contribution to cumulative effects of GHGs.

BAAQMD's approach is to identify the GHG emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions. If a project would generate GHG emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact. Based on this approach, the GHG emissions of the proposed project during the operation phase would not make a considerable contribution to cumulative GHG impacts.

5.3 Mitigation Measures

The estimated project-level GHG emissions from operation would not have a significant impact; as result, no mitigation is required.

5.4 Summary of Project's GHG Impacts

In summary, the air quality analysis concludes that during the long-term operation of the project, all GHG emissions are expected to be similar to current emissions levels. There are no GHG emissions thresholds established by the BAAQMD for construction activities.

SECTION 6

HEALTH RISK ANALYSIS

This section presents the methodologies used to determine the health risks and the impacts associated with the proposed project.

6.1 Methodology

6.1.1 Construction

6.1.1.1 Project-Level

During construction, toxic emissions are generated mainly from fuel combustion in the construction equipment. In order to determine the health impacts of these toxic emissions, a health risk assessment (HRA) was performed.

A HRA is an estimate of the probability that adverse health effects could occur due to exposure to toxic pollutants. A facility's air emissions, stack information, operation schedule, local weather conditions, chemical dose-response data, etc. are fed into a computer model to produce an estimate of the health risks to nearby people (receptors). HRA is performed in 3 steps: hazard identification, exposure assessment, and risk characterization.

Hazard Identification

Hazard identification refers to the identification of substances as carcinogens, reproductive toxins, chronic toxins, or acute toxins, or to the identification of a type of exposure as hazardous. Regulated hazardous substances are listed in BAAQMD's toxic rule and ARB's regulated toxic lists. The toxic air contaminants (TACs) used in the HRA include $PM_{2.5}$, diesel particulate matter (DPM) and acrolein. DPM and acrolein are byproducts of diesel fuel combustion. Sources of $PM_{2.5}$ include activities such as earthmoving. There are other TACs from diesel combustion besides DPM and acrolein, but they are less potent and thus are not included in the HRA.

Exposure Assessment

Exposure assessment is the identification and quantification of all routes of human exposure to substances of concern. The Industrial Source Code Short Term Version 3 (ISCST3) model issued by EPA was used for estimation of offsite concentrations of TACs. Based on land use surrounding the proposed project and EPA guidelines, an urban profile was assumed. Meteorology data from the BAAQMD's Fort Funston Station were used. The model selection is consistent with the BAAQMD CEQA guidelines. The following inputs were used for the ISCST3 model.

1. Emission Source Models

Construction activities were modeled as area sources placed over the area of wetland restoration activities. The project is expected to require soil export activities using haul trucks which have the potential to emit toxic air contaminants (TACs). Haul trucks travelling to and from the site were modeled as an area source extending ¼ mile from the project site. Pollutants modeled include $PM_{2.5}$, DPM, and acrolein which are emitted from heavy construction equipment and haul trucks.

2. Site Elevation

Elevation data and aerial photography was obtained from the United States Geological Survey (USGS) Seamless Data Warehouse [Ref. 5].

3. Receptor Models

Modeled sensitive receptor locations included residents located to the north and south of the project site. The project site is currently surrounded by a golf course which is expected to be operational during construction activities. Therefore, sensitive receptor locations were placed in the golf course to account for people who may be present during construction activities. Receptor locations were placed at 50-meter intervals. Construction emission sources and receptors included in the model are presented in Figure 3. To estimate a worst-case health impact, the nearest sensitive receptor was assumed to be a residential child at the project fence line.

Risk Characterization

Risk characterization is the final step of the HRA. It quantifies the human health risk based on the exposure assessment and dose-response relationships (cancer potency factors and reference exposure levels). In this assessment, three types of human health effects were considered: 1) cancer, 2) chronic effects, and 3) acute effects. Health risks including cancer, chronic, and acute risks are calculated based on the Office of Environmental Health and Hazard Assessment (OEHHA) guidelines. In order to present the worst-case scenario, the BAAQMD recommends that cancer risk be weighted by a factor of 10 for exposure that occurs to an individual from the third trimester of pregnancy to two years of age. Health risk (cancer, chronic, and acute) was calculated using the ARB Hot Spots Analysis Reporting Program (HARP) which is based on OEHHA risk factors [Ref. 6]. Annual $PM_{2.5}$ emissions from construction activities were also modeled to determine impacts on sensitive receptors.

Following is a summary of the OEHHA method to determine the cancer, chronic and acute health risk:

Cancer Risk

The cancer risks were calculated as the individual excess lifetime cancer risk (i.e., the probability that an individual may develop cancer from a lifetime exposure to the chemicals of concern).

There are different pathways that a toxicant can enter a human body. Gaseous toxicants can enter a human body through the inhalation pathway. Gaseous toxicants can also be deposited on soil, surface water, or plants, which can then enter a human body through ingestion and dermal pathways. Semi-volatile and metal toxicants can enter the body through inhalation, ingestion and dermal pathways.

For inhalation pathway, the cancer risk is computed using the following equation:

$$CRinh = (GLC \times CP \times CRAF \times BR \times EF \times ED \times 10^{-6}) / AT \quad \text{Eq. 1}$$

Where:

CRinh = Cancer Risk through inhalation
GLC = Annual Average Ground-level concentration (from air dispersion model)
CP = Cancer Potency factor
BR = Daily Breathing Rate
EF = Exposure frequency
ED = Exposure Duration
AT = Average Time Period
CRAF = Cancer risk adjustment factors:
1.7 for resident receptors exposure
1.0 for offsite worker exposure

OEHHA revised the HRA guideline in May 2009, which included procedures to consider the increased susceptibility of infants and children to carcinogens compared to adults. The revised procedures require incorporation of age sensitivity factors (ASFs) in the calculation of cancer risk for infants, children and adolescents. The ASFs results in weighting cancer risk by a factor of 10 for exposure that occurs from the third trimester of pregnancy to 2 years of age and a factor of 3 for exposure that occurs from 2 years through 15 years of age.

For the proposed project, the risks due to exposure of DPM thru the non-inhalation pathways are not considered. This is consisted with the BAAQMD guidelines [Ref. 7].

Chronic Risk

The potential for long-term chronic health effects is quantified by comparing the predicted level of exposure to a reference exposure level (REL). This ratio of predicted exposure to reference exposure is referred to as a chronic hazard index (HIc). HIc is calculated by summing the ratios of each toxic substance over its REL. The equation for estimating HIc is as follows:

$$HIc = \sum Ci / \text{chronic RELi}$$

Where:

Ci = Ground-level concentration of substance i (annual average concentration)
RELi = Chronic Reference Exposure Level for substance i.

Acute Risk

In the same manner as the quantification of chronic health effects, the potential for short-term acute health effects was quantified using a hazard index. The acute hazard index (HIa) is calculated by dividing the maximum estimated hourly concentration of each toxic air pollutant by its reference short-term exposure levels. The equation for estimating HIa is as follows:

$$HIa = \sum Ci / \text{Acute RELi}$$

Where:

Ci = Maximum hourly ground-level concentration of substance i
RELi = Acute Reference Exposure Level for substance i.

Table 5 provides the HRA input parameters.

6.1.1.2 Cumulative

Cumulative health risk was determined by obtaining risk values from nearby sources of toxics from the BAAQMD website. Within 1,000 feet of the project area, there is only one source, which is a gas station owned and operated by the SFRPD for refueling of golf carts. Tetra Tech contacted the BAAQMD for the health risks from this facility. The BAAQMD determined that the risk from the SFRPD gas station is insignificant.

The project is located within 1,000 feet of a Highway 1, which is a major roadway. Vehicles on Highway 1 emit TACs and $PM_{2.5}$. Health risk impacts from these nearby traffic flows on Highway 1 were determined using BAAQMD roadway screening models.

Relative to the project site at Sharp Park in San Mateo County, Highway 1 runs north and south and is approximately 400 feet from the project site. Based on this location, the BAAQMD screening model was used to determine risks and $PM_{2.5}$ emissions from Highway 1 [Ref. 8, 9]. The risk values and $PM_{2.5}$ emissions profiles were added to project-level risks to determine the cumulative risks for the project.

6.1.2 Operational

6.1.2.1 Project-Level

During operation, planned activities would result in operational emissions. However, because proposed operations are expected to be substantially similar to current operations, negligible changes are anticipated in the operation emissions. As a result, health risks from these operation emissions are not quantified.

6.1.2.2 Cumulative

Planned activities would result in operational emissions. However, because proposed operations are expected to be substantially similar to current operations, negligible changes are anticipated in the operation emissions. As a result, health risks from these operation emissions are not quantified.

6.2 Results of Analysis

6.2.1 Project Level

Table 6 summarizes the HRA results. The construction emissions would result in a less than significant impact with regard to TACs and health risk. Cancer risk and $PM_{2.5}$ concentrations are presented in Figures 4 and 5 respectively. Figure 4 identifies the locations of the highest cancer risk, chronic risk and acute risk. Figure 5 shows the location of the highest $PM_{2.5}$ concentrations. Appendix B provides the dispersion and risk model files. The output file data is provided electronically on CD.

6.2.2. Cumulative

As shown in Table 6, the cumulative emissions would result in a less than significant impact related to TACs and health risk.

6.3 Mitigation Measures

The estimated health risk is below the BAAQMD thresholds; therefore, no mitigation is required.

6.4 Summary of Project's Health Risk Impacts

In summary, the HRA concludes that toxic emissions during short-term construction do not exceed the significance thresholds established by the BAAQMD. During the long-term operation of the project, all emissions and health risks are expected to be remained at current levels.

Table 5. HRA Model Input Parameters

Input Parameters – ISCST3 MODEL		
Diesel Particulate Matter Run (Cancer and Chronic Risk)	**On-site Construction**	**Haul Route**
DPM Emission Sources Modeled as Area Source, m^2	153,994	22,052
Hours of Emissions, hrs/day	8	8
Emission Rate, g/s	3	3
Emission Rate, g/s-m^2	1.95E-05	1.36E-04
Diesel Particulate Matter Run (Acute Risk)		
Emission Sources Modeled as Area Source, m^2	153,994	22,052
Hours of Emissions, hrs/day	8	8
Emission Rate, g/s	1	1
Emission Rate, g/s-m^2	6.49E-06	4.53E-05
$PM_{2.5}$ Run		
Emission Sources Modeled as Area Source, m^2	153,994	22,052
Hours of Emissions, hrs/day	8	8
Seconds per day	28800	28800
Emission Rate, lbs/day	0.5	
Emission Rate, g/s	0.00845	8.41E-05
Emission Rage, g/s-m^2	5.49E-08	3.82E-09

Input Parameters - HARP MODEL		
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$	1.10E+00	
Breathing Rate, (L/kg-day)	302	
Exposure Frequency (day/years)	365	
Exposure Duration (years)	1	
Average Time Period (days)	25,550	
Cancer Risk Adjustment Factor Resident	1.7	
Cancer Risk Adjustment Factor worker	1	
Age Sensitive Factors		
Third Trimester of pregnancy to 2 years of age	10	
2 years through 15 years of age	3	
Acrolein Acute Inhalation REL, $\mu g/m^3$	2.5	Eyes; Respiratory System
Acrolein Chronic Inhalation REL, $\mu g/m^3$	0.35	Eyes; Respiratory System

DPM Acute Inhalation REL, $\mu g/m^3$	0	N/A
DPM Chronic Inhalation REL, $\mu g/m^3$	5.0	Respiratory System

Annual Emissions (lbs/year)

	On-site Construction	**Haul Truck**
PM_{10} (DPM)	51.59	2.044
$PM_{2.5}$	47.46	1.881
Acrolein	0.67	0.027

Hourly Emissions (lbs/hr)

	On-site Construction	**Haul Truck**
PM_{10} (DPM)	0.07	5.81E-03
$PM_{2.5}$	0.07	5.34E-03
Acrolein	9.5E-04	7.56E-05

g/s – grams per second
g/s-m^2 – grams per second per square meters
hrs/day – hours per day
L/kg-day – liters per kilograms per day
m^2 – square meters
mg/kg-day – milligrams per kilograms per day
$\mu g/m^3$ – micrograms per cubic meters
N/A – not applicable

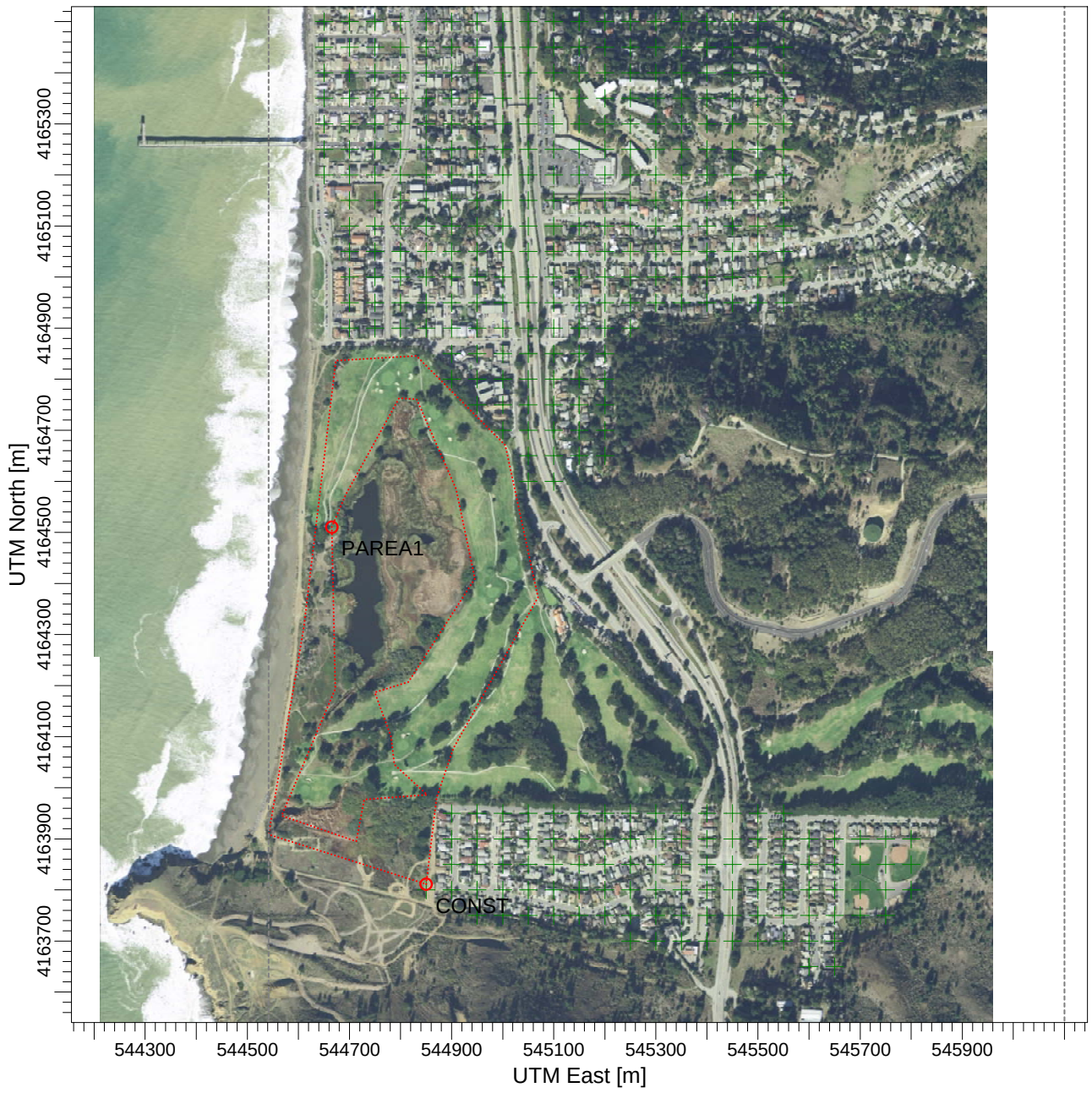
Table 6. CEQA Thresholds of Significance for Construction Emissions and Health Risks

	Health Risk (Individual Project)	**Health Risk (Cumulative)**
BAAQMD Threshold for Construction Emissions	Cancer Risk < 10 in a million, Chronic Index <1, Acute Index <1, Ambient $PM_{2.5}$ < 0.3 ug/m^3 annual average, Zone of Impact = 1,000 feet from fence line	Cancer Risk < 100 in a million, Chronic Index <10, Acute Index (no threshold)Ambient $PM_{2.5}$ < 0.8 ug/m^3 annual average (from all local sources), Zone of Impact = 1,000 feet from fence line
Sharp Park Construction Emissions	Cancer Risk = 0.62 in a million, Chronic Risk = 0.00248, Acute Risk = 0.0088 $PM_{2.5}$ = 0.04 ug/m^3	Cancer Risk = 2.22 in a million, Chronic Risk = 0.0045, $PM_{2.5}$ = 0.061 ug/m^3 (Note 1)
Exceed Thresholds?	**No**	**No**

Note 1:

- Cumulative risks and $PM_{2.5}$ emission include contributions from Highway 1:
  Cancer risk = 1.6 in a million
  Chronic risk = 0.002
  $PM_{2.5}$ = 0.021 µg/m^3
- Risks and $PM_{2.5}$ emissions for the SFRPD's gas station are insignificant based on information provided by BAAQMD (Ref. 10)

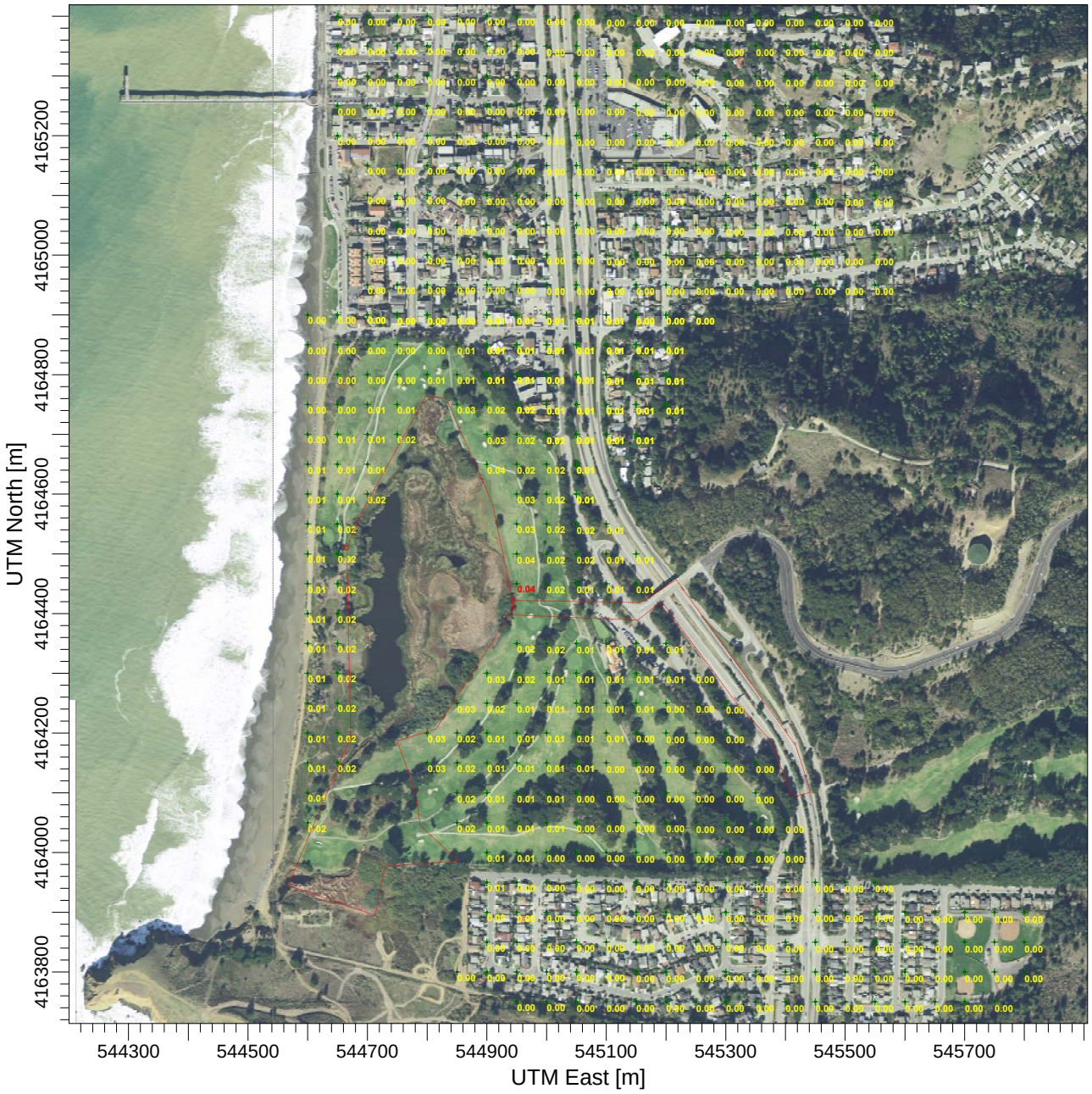
Figure 3. Modeled Emissions Sources and Receptors



COMMENTS:	SOURCES: **2**	COMPANY NAME:	
	RECEPTORS: **483**	MODELER:	
		SCALE: 1:12,506 0 0.4 km	
		DATE: **1/20/2011**	PROJECT NO.:

Figure 4. Health Risk Summary

Figure 5. PM2.5 Emission Profile



COMMENTS: Construction PM2.5 Annual	SOURCES: **2**	COMPANY NAME:	
	RECEPTORS: **668**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:10,720 0 0.4 km	
	MAX: **0.03922 ug/m^3**	DATE: **8/28/2011**	PROJECT NO.:

SECTION 7

CONCLUSIONS

This air quality analysis for the proposed Sharp Park wetland restoration project has the following conclusions.

7.1 Construction - Short-Term Impacts

During the construction phase, the short-term NOx emissions would exceed BAAQMD significant thresholds. Mitigation measures are proposed that can reduce such impacts.

All other short-term criteria air pollutant emissions would not exceed BAAQMD significant threshold.

The HRA concluded that toxic emissions during short-term construction do not exceed the significant health risk thresholds established by the BAAQMD.

7.2 Operation - Long-Term Impacts

During operation, planned maintenance activities would remain similar to current levels at the Park.

SECTION 8

REFERENCES

1. BAAQMD CEQA Guidelines, June 2010, http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx

2. Federal and State Air Quality Standards, http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm

3. Bay Area Air Pollution Summary, 2009, http://www.baaqmd.gov/Divisions/Communications-and-Outreach/Air-Quality-in-the-Bay-Area/Air-Quality-Summaries.aspx

4. ARB's Urban Emission Model, 2007, http://www.urbemis.com

5. Elevation Data, http://seamless.usgs.gov/ (Accessed January 2011)

6. California Air Resources Board - HotSpots Analysis and Reporting Program http://www.arb.ca.gov/toxics/harp/harp.htm

7. BAAQMD Air Toxic Analysis Guideline, "Recommended Methods for Screening and Modeling Local Risks and Hazards", May 2010, Page 79.

8. BAAQMD Air Toxic Analysis Guideline, "Recommended Methods for Screening and Modeling Local Risks and Hazards", May 2010, Section 3.1.2, Page 18.

9. BAAQMD Highway Screening Analysis Tool, "San Mateo County – 6ft Elevation"

10. Email from Ms. Andrea Gordon of BAAQMD on June 16,2011

APPENDIX A

URBEMIS MODEL RUNS

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
400	GRID	545550	4162650	6.74E-05	1.46E-06	9.80916E-09	1.40131E-10	1.40131E-09
402	GRID	545450	4162750	6.97E-05	1.62E-06	1.01499E-08	1.44999E-10	1.44999E-09
406	GRID	545400	4162800	7.12E-05	1.88E-06	1.04081E-08	1.48688E-10	1.48688E-09
401	GRID	545550	4162700	7.23E-05	1.53E-06	1.05164E-08	1.50234E-10	1.50234E-09
403	GRID	545500	4162750	7.37E-05	1.58E-06	1.0714E-08	1.53058E-10	1.53058E-09
407	GRID	545450	4162800	7.55E-05	1.70E-06	1.09851E-08	1.56931E-10	1.56931E-09
412	GRID	545400	4162850	7.72E-05	1.98E-06	1.12776E-08	1.61108E-10	1.61108E-09
404	GRID	545550	4162750	7.75E-05	1.61E-06	1.12578E-08	1.60826E-10	1.60826E-09
408	GRID	545500	4162800	7.95E-05	1.66E-06	1.15493E-08	1.6499E-10	1.6499E-09
405	GRID	545600	4162750	8.10E-05	1.69E-06	1.17761E-08	1.6823E-10	1.6823E-09
413	GRID	545450	4162850	8.15E-05	1.80E-06	1.18546E-08	1.69351E-10	1.69351E-09
409	GRID	545550	4162800	8.32E-05	1.70E-06	1.20943E-08	1.72775E-10	1.72775E-09
418	GRID	545400	4162900	8.39E-05	2.09E-06	1.22446E-08	1.74923E-10	1.74923E-09
414	GRID	545500	4162850	8.57E-05	1.75E-06	1.24504E-08	1.77863E-10	1.77863E-09
410	GRID	545600	4162800	8.66E-05	1.80E-06	1.25834E-08	1.79763E-10	1.79763E-09
424	GRID	545350	4162950	8.66E-05	2.59E-06	1.26964E-08	1.81378E-10	1.81378E-09
419	GRID	545450	4162900	8.84E-05	1.90E-06	1.28508E-08	1.83582E-10	1.83582E-09
411	GRID	545650	4162800	8.93E-05	1.90E-06	1.29788E-08	1.85411E-10	1.85411E-09
415	GRID	545550	4162850	8.93E-05	1.81E-06	1.2965E-08	1.85214E-10	1.85214E-09
431	GRID	545300	4163000	8.95E-05	3.29E-06	1.32076E-08	1.8868E-10	1.8868E-09
425	GRID	545400	4162950	9.13E-05	2.21E-06	1.33079E-08	1.90113E-10	1.90113E-09
420	GRID	545500	4162900	9.24E-05	1.86E-06	1.34162E-08	1.91659E-10	1.91659E-09
416	GRID	545600	4162850	9.24E-05	1.91E-06	1.34237E-08	1.91767E-10	1.91767E-09
432	GRID	545350	4163000	9.46E-05	2.77E-06	1.38624E-08	1.98034E-10	1.98034E-09
417	GRID	545650	4162850	9.50E-05	2.03E-06	1.38203E-08	1.97433E-10	1.97433E-09
426	GRID	545450	4162950	9.57E-05	2.01E-06	1.39129E-08	1.98755E-10	1.98755E-09
421	GRID	545550	4162900	9.59E-05	1.93E-06	1.39332E-08	1.99046E-10	1.99046E-09
422	GRID	545600	4162900	9.88E-05	2.05E-06	1.43615E-08	2.05165E-10	2.05165E-09
427	GRID	545500	4162950	9.95E-05	1.98E-06	1.44466E-08	2.06379E-10	2.06379E-09
433	GRID	545400	4163000	9.93E-05	2.35E-06	1.44689E-08	2.06698E-10	2.06698E-09
423	GRID	545650	4162900	1.01E-04	2.18E-06	1.4729E-08	2.10414E-10	2.10414E-09
428	GRID	545550	4162950	1.03E-04	2.06E-06	1.49661E-08	2.13802E-10	2.13802E-09
434	GRID	545450	4163000	1.04E-04	2.13E-06	1.50713E-08	2.15304E-10	2.15304E-09
445	GRID	545350	4163050	1.04E-04	2.96E-06	1.51576E-08	2.16537E-10	2.16537E-09
429	GRID	545600	4162950	1.06E-04	2.20E-06	1.53969E-08	2.19956E-10	2.19956E-09
435	GRID	545500	4163000	1.08E-04	2.11E-06	1.56062E-08	2.22946E-10	2.22946E-09
430	GRID	545650	4162950	1.08E-04	2.34E-06	1.57022E-08	2.24318E-10	2.24318E-09
446	GRID	545400	4163050	1.08E-04	2.51E-06	1.57907E-08	2.25582E-10	2.25582E-09
436	GRID	545550	4163000	1.11E-04	2.21E-06	1.60966E-08	2.29952E-10	2.29952E-09
447	GRID	545450	4163050	1.13E-04	2.28E-06	1.63602E-08	2.33717E-10	2.33717E-09
437	GRID	545600	4163000	1.14E-04	2.37E-06	1.64995E-08	2.35707E-10	2.35707E-09
458	GRID	545350	4163100	1.14E-04	3.19E-06	1.66163E-08	2.37375E-10	2.37375E-09
438	GRID	545650	4163000	1.15E-04	2.52E-06	1.67744E-08	2.39634E-10	2.39634E-09
448	GRID	545500	4163050	1.16E-04	2.27E-06	1.68964E-08	2.41377E-10	2.41377E-09
439	GRID	545700	4163000	1.17E-04	2.68E-06	1.69871E-08	2.42673E-10	2.42673E-09
444	GRID	545950	4163000	1.16E-04	4.14E-06	1.71005E-08	2.44292E-10	2.44292E-09
443	GRID	545900	4163000	1.16E-04	3.79E-06	1.71136E-08	2.4448E-10	2.4448E-09
440	GRID	545750	4163000	1.17E-04	2.86E-06	1.70756E-08	2.43937E-10	2.43937E-09
442	GRID	545850	4163000	1.17E-04	3.43E-06	1.71255E-08	2.4465E-10	2.4465E-09
441	GRID	545800	4163000	1.17E-04	3.11E-06	1.7112E-08	2.44457E-10	2.44457E-09
459	GRID	545400	4163100	1.18E-04	2.70E-06	1.72114E-08	2.45878E-10	2.45878E-09
449	GRID	545550	4163050	1.20E-04	2.39E-06	1.73576E-08	2.47966E-10	2.47966E-09
450	GRID	545600	4163050	1.22E-04	2.57E-06	1.77313E-08	2.53305E-10	2.53305E-09
460	GRID	545450	4163100	1.23E-04	2.45E-06	1.78101E-08	2.5443E-10	2.5443E-09
451	GRID	545650	4163050	1.24E-04	2.74E-06	1.79783E-08	2.56833E-10	2.56833E-09
457	GRID	545950	4163050	1.23E-04	4.56E-06	1.81419E-08	2.59169E-10	2.59169E-09
456	GRID	545900	4163050	1.23E-04	4.22E-06	1.81563E-08	2.59375E-10	2.59375E-09
455	GRID	545850	4163050	1.24E-04	3.82E-06	1.81631E-08	2.59474E-10	2.59474E-09
452	GRID	545700	4163050	1.24E-04	2.92E-06	1.80985E-08	2.58549E-10	2.58549E-09
453	GRID	545750	4163050	1.24E-04	3.14E-06	1.81615E-08	2.59451E-10	2.59451E-09
454	GRID	545800	4163050	1.24E-04	3.45E-06	1.81738E-08	2.59626E-10	2.59626E-09
470	GRID	545350	4163150	1.25E-04	3.44E-06	1.82676E-08	2.60966E-10	2.60966E-09
461	GRID	545500	4163100	1.26E-04	2.44E-06	1.83159E-08	2.61655E-10	2.61655E-09
462	GRID	545550	4163100	1.29E-04	2.60E-06	1.87821E-08	2.68316E-10	2.68316E-09
471	GRID	545400	4163150	1.30E-04	2.90E-06	1.88565E-08	2.69379E-10	2.69379E-09
463	GRID	545600	4163100	1.31E-04	2.80E-06	1.9095E-08	2.72785E-10	2.72785E-09
469	GRID	545900	4163100	1.31E-04	4.68E-06	1.9332E-08	2.76171E-10	2.76171E-09
468	GRID	545850	4163100	1.32E-04	4.26E-06	1.93668E-08	2.76668E-10	2.76668E-09
464	GRID	545650	4163100	1.32E-04	2.99E-06	1.9281E-08	2.75443E-10	2.75443E-09
467	GRID	545800	4163100	1.32E-04	3.84E-06	1.94016E-08	2.77165E-10	2.77165E-09
465	GRID	545700	4163100	1.33E-04	3.20E-06	1.93745E-08	2.76779E-10	2.76779E-09
466	GRID	545750	4163100	1.33E-04	3.47E-06	1.94135E-08	2.77335E-10	2.77335E-09
472	GRID	545450	4163150	1.34E-04	2.64E-06	1.94209E-08	2.77442E-10	2.77442E-09
473	GRID	545500	4163150	1.37E-04	2.65E-06	1.99305E-08	2.84721E-10	2.84721E-09

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
474	GRID	545550	4163150	1.40E-04	2.84E-06	2.03371E-08	2.9053E-10	2.9053E-09
475	GRID	545600	4163150	1.42E-04	3.06E-06	2.0622E-08	2.94601E-10	2.94601E-09
478	GRID	545750	4163150	1.42E-04	3.87E-06	2.07692E-08	2.96703E-10	2.96703E-09
476	GRID	545650	4163150	1.42E-04	3.29E-06	2.07498E-08	2.96425E-10	2.96425E-09
477	GRID	545700	4163150	1.42E-04	3.54E-06	2.07849E-08	2.96927E-10	2.96927E-09
381	GRID	544650	4165600	2.85E-04	4.46E-06	4.11982E-08	5.88545E-10	5.88545E-09
362	GRID	544650	4165550	3.03E-04	4.53E-06	4.37434E-08	6.24906E-10	6.24906E-09
382	GRID	544700	4165600	3.18E-04	5.04E-06	4.60345E-08	6.57636E-10	6.57636E-09
343	GRID	544650	4165500	3.23E-04	4.63E-06	4.66093E-08	6.65847E-10	6.65847E-09
363	GRID	544700	4165550	3.41E-04	5.11E-06	4.92123E-08	7.03032E-10	7.03032E-09
324	GRID	544650	4165450	3.45E-04	4.78E-06	4.97996E-08	7.11423E-10	7.11423E-09
383	GRID	544750	4165600	3.56E-04	5.70E-06	5.15147E-08	7.35924E-10	7.35924E-09
344	GRID	544700	4165500	3.65E-04	5.19E-06	5.27094E-08	7.52992E-10	7.52992E-09
305	GRID	544650	4165400	3.72E-04	4.97E-06	5.363E-08	7.66143E-10	7.66143E-09
2	GRID	545650	4163650	3.69E-04	1.42E-05	5.46264E-08	7.80377E-10	7.80377E-09
364	GRID	544750	4165550	3.81E-04	5.81E-06	5.50169E-08	7.85955E-10	7.85955E-09
1	GRID	545600	4163650	3.81E-04	1.23E-05	5.59472E-08	7.99246E-10	7.99246E-09
384	GRID	544800	4165600	3.92E-04	6.38E-06	5.66817E-08	8.09739E-10	8.09739E-09
325	GRID	544700	4165450	3.94E-04	5.29E-06	5.68442E-08	8.12059E-10	8.12059E-09
286	GRID	544650	4165350	4.01E-04	5.24E-06	5.77873E-08	8.25533E-10	8.25533E-09
345	GRID	544750	4165500	4.12E-04	5.92E-06	5.94685E-08	8.4955E-10	8.4955E-09
11	GRID	545650	4163700	4.12E-04	1.75E-05	6.1112E-08	8.73029E-10	8.73029E-09
365	GRID	544800	4165550	4.23E-04	6.57E-06	6.11459E-08	8.73513E-10	8.73513E-09
306	GRID	544700	4165400	4.25E-04	5.45E-06	6.13033E-08	8.75762E-10	8.75762E-09
385	GRID	544850	4165600	4.27E-04	6.99E-06	6.18399E-08	8.83428E-10	8.83428E-09
10	GRID	545600	4163700	4.25E-04	1.54E-05	6.27246E-08	8.96066E-10	8.96066E-09
28	GRID	545750	4163750	4.25E-04	2.03E-05	6.34152E-08	9.05931E-10	9.05931E-09
267	GRID	544650	4165300	4.34E-04	5.58E-06	6.25897E-08	8.94139E-10	8.94139E-09
9	GRID	545550	4163700	4.43E-04	1.31E-05	6.49208E-08	9.2744E-10	9.2744E-09
27	GRID	545700	4163750	4.41E-04	2.11E-05	6.57464E-08	9.39235E-10	9.39235E-09
326	GRID	544750	4165450	4.45E-04	6.02E-06	6.4237E-08	9.17672E-10	9.17672E-09
48	GRID	545800	4163800	4.52E-04	2.39E-05	6.77327E-08	9.6761E-10	9.6761E-09
346	GRID	544800	4165500	4.59E-04	6.76E-06	6.62426E-08	9.46323E-10	9.46323E-09
386	GRID	544900	4165600	4.59E-04	7.58E-06	6.63606E-08	9.48009E-10	9.48009E-09
8	GRID	545500	4163700	4.59E-04	1.14E-05	6.69005E-08	9.55722E-10	9.55722E-09
287	GRID	544700	4165350	4.61E-04	5.66E-06	6.64038E-08	9.48626E-10	9.48626E-09
26	GRID	545650	4163750	4.59E-04	2.13E-05	6.83193E-08	9.7599E-10	9.7599E-09
366	GRID	544850	4165550	4.63E-04	7.30E-06	6.69542E-08	9.56489E-10	9.56489E-09
248	GRID	544650	4165250	4.72E-04	6.03E-06	6.8041E-08	9.72015E-10	9.72015E-09
47	GRID	545750	4163800	4.70E-04	2.43E-05	7.03181E-08	1.00454E-09	1.00454E-08
7	GRID	545450	4163700	4.76E-04	1.04E-05	6.92976E-08	9.89965E-10	9.89965E-09
25	GRID	545600	4163750	4.76E-04	1.98E-05	7.06285E-08	1.00898E-09	1.00898E-08
307	GRID	544750	4165400	4.85E-04	6.16E-06	6.996E-08	9.99429E-10	9.99429E-09
387	GRID	544950	4165600	4.87E-04	8.22E-06	7.05707E-08	1.00815E-09	1.00815E-08
46	GRID	545700	4163800	4.90E-04	2.50E-05	7.32832E-08	1.0469E-09	1.0469E-08
6	GRID	545400	4163700	4.94E-04	1.15E-05	7.19834E-08	1.02833E-09	1.02833E-08
327	GRID	544800	4165450	4.99E-04	6.93E-06	7.19719E-08	1.02817E-09	1.02817E-08
367	GRID	544900	4165550	4.99E-04	7.98E-06	7.21213E-08	1.0303E-09	1.0303E-08
24	GRID	545550	4163750	4.96E-04	1.66E-05	7.30285E-08	1.04326E-09	1.04326E-08
268	GRID	544700	4165300	5.03E-04	5.95E-06	7.24663E-08	1.03523E-09	1.03523E-08
67	GRID	545800	4163850	4.96E-04	2.97E-05	7.48993E-08	1.06999E-09	1.06999E-08
347	GRID	544850	4165500	5.03E-04	7.60E-06	7.27011E-08	1.03859E-09	1.03859E-08
5	GRID	545350	4163700	5.12E-04	1.35E-05	7.48074E-08	1.06868E-09	1.06868E-08
45	GRID	545650	4163800	5.10E-04	2.60E-05	7.62734E-08	1.08962E-09	1.08962E-08
229	GRID	544650	4165200	5.16E-04	6.60E-06	7.44593E-08	1.0637E-09	1.0637E-08
388	GRID	545000	4165600	5.19E-04	9.00E-06	7.51177E-08	1.07311E-09	1.07311E-08
23	GRID	545500	4163750	5.19E-04	1.41E-05	7.5846E-08	1.08351E-09	1.08351E-08
66	GRID	545750	4163850	5.19E-04	3.02E-05	7.81311E-08	1.11616E-09	1.11616E-08
4	GRID	545300	4163700	5.28E-04	1.42E-05	7.71261E-08	1.1018E-09	1.1018E-08
288	GRID	544750	4165350	5.32E-04	6.32E-06	7.66387E-08	1.09484E-09	1.09484E-08
368	GRID	544950	4165550	5.32E-04	8.69E-06	7.69752E-08	1.09965E-09	1.09965E-08
44	GRID	545600	4163800	5.32E-04	2.55E-05	7.9367E-08	1.13381E-09	1.13381E-08
3	GRID	545250	4163700	5.39E-04	1.46E-05	7.87608E-08	1.12515E-09	1.12515E-08
22	GRID	545450	4163750	5.43E-04	1.27E-05	7.91309E-08	1.13044E-09	1.13044E-08
348	GRID	544900	4165500	5.45E-04	8.40E-06	7.88351E-08	1.12622E-09	1.12622E-08
308	GRID	544800	4165400	5.48E-04	7.10E-06	7.89675E-08	1.12811E-09	1.12811E-08
65	GRID	545700	4163850	5.43E-04	3.07E-05	8.16923E-08	1.16703E-09	1.16703E-08
389	GRID	545050	4165600	5.50E-04	9.88E-06	7.96799E-08	1.13828E-09	1.13828E-08
328	GRID	544850	4165450	5.52E-04	7.90E-06	7.97155E-08	1.13879E-09	1.13879E-08
86	GRID	545800	4163900	5.43E-04	3.80E-05	8.27344E-08	1.18192E-09	1.18192E-08
249	GRID	544700	4165250	5.54E-04	6.35E-06	7.98114E-08	1.14016E-09	1.14016E-08
43	GRID	545550	4163800	5.59E-04	2.19E-05	8.2655E-08	1.18079E-09	1.18079E-08
369	GRID	545000	4165550	5.68E-04	9.52E-06	8.21648E-08	1.17378E-09	1.17378E-08
21	GRID	545400	4163750	5.70E-04	1.41E-05	8.31346E-08	1.18764E-09	1.18764E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
64	GRID	545650	4163850	5.68E-04	3.18E-05	8.53414E-08	1.21916E-09	1.21916E-08
85	GRID	545750	4163900	5.70E-04	3.89E-05	8.66627E-08	1.23804E-09	1.23804E-08
390	GRID	545100	4165600	5.81E-04	1.09E-05	8.42671E-08	1.20382E-09	1.20382E-08
269	GRID	544750	4165300	5.85E-04	6.56E-06	8.42781E-08	1.20397E-09	1.20397E-08
349	GRID	544950	4165500	5.85E-04	9.17E-06	8.46498E-08	1.20928E-09	1.20928E-08
42	GRID	545500	4163800	5.88E-04	1.81E-05	8.62348E-08	1.23193E-09	1.23193E-08
20	GRID	545350	4163750	5.99E-04	1.64E-05	8.75807E-08	1.25115E-09	1.25115E-08
329	GRID	544900	4165450	5.99E-04	8.82E-06	8.65009E-08	1.23573E-09	1.23573E-08
63	GRID	545600	4163850	5.97E-04	3.28E-05	8.95991E-08	1.27999E-09	1.27999E-08
289	GRID	544800	4165350	6.03E-04	7.28E-06	8.69163E-08	1.24166E-09	1.24166E-08
370	GRID	545050	4165550	6.03E-04	1.05E-05	8.73733E-08	1.24819E-09	1.24819E-08
309	GRID	544850	4165400	6.08E-04	8.20E-06	8.76806E-08	1.25258E-09	1.25258E-08
84	GRID	545700	4163900	5.99E-04	3.96E-05	9.08828E-08	1.29833E-09	1.29833E-08
230	GRID	544700	4165200	6.12E-04	6.87E-06	8.81248E-08	1.25893E-09	1.25893E-08
391	GRID	545150	4165600	6.14E-04	1.21E-05	8.91838E-08	1.27405E-09	1.27405E-08
41	GRID	545450	4163800	6.19E-04	1.58E-05	9.03449E-08	1.29064E-09	1.29064E-08
350	GRID	545000	4165500	6.25E-04	1.01E-05	9.04795E-08	1.29256E-09	1.29256E-08
19	GRID	545300	4163750	6.25E-04	1.69E-05	9.14588E-08	1.30655E-09	1.30655E-08
62	GRID	545550	4163850	6.28E-04	3.00E-05	9.36339E-08	1.33763E-09	1.33763E-08
83	GRID	545650	4163900	6.32E-04	4.06E-05	9.57744E-08	1.36821E-09	1.36821E-08
371	GRID	545100	4165550	6.39E-04	1.16E-05	9.26069E-08	1.32296E-09	1.32296E-08
250	GRID	544750	4165250	6.48E-04	6.89E-06	9.31977E-08	1.3314E-09	1.3314E-08
330	GRID	544950	4165450	6.45E-04	9.79E-06	9.32939E-08	1.33277E-09	1.33277E-08
392	GRID	545200	4165600	6.45E-04	1.32E-05	9.37836E-08	1.33977E-09	1.33977E-08
18	GRID	545250	4163750	6.50E-04	1.72E-05	9.49823E-08	1.35689E-09	1.35689E-08
40	GRID	545400	4163800	6.54E-04	1.76E-05	9.56789E-08	1.36684E-09	1.36684E-08
310	GRID	544900	4165400	6.63E-04	9.35E-06	9.57663E-08	1.36809E-09	1.36809E-08
351	GRID	545050	4165500	6.66E-04	1.12E-05	9.63469E-08	1.37638E-09	1.37638E-08
61	GRID	545500	4163850	6.63E-04	2.41E-05	9.78631E-08	1.39804E-09	1.39804E-08
270	GRID	544800	4165300	6.70E-04	7.50E-06	9.64533E-08	1.3779E-09	1.3779E-08
17	GRID	545200	4163750	6.70E-04	1.74E-05	9.78595E-08	1.39799E-09	1.39799E-08
290	GRID	544850	4165350	6.74E-04	8.49E-06	9.7229E-08	1.38899E-09	1.38899E-08
82	GRID	545600	4163900	6.68E-04	4.22E-05	1.01083E-07	1.44405E-09	1.44405E-08
372	GRID	545150	4165550	6.77E-04	1.29E-05	9.81699E-08	1.40243E-09	1.40243E-08
211	GRID	544700	4165150	6.81E-04	7.54E-06	9.80441E-08	1.40063E-09	1.40063E-08
393	GRID	545250	4165600	6.79E-04	1.44E-05	9.87002E-08	1.41E-09	1.41E-08
16	GRID	545150	4163750	6.86E-04	1.69E-05	1.00015E-07	1.42879E-09	1.42879E-08
331	GRID	545000	4165450	6.92E-04	1.08E-05	1.00087E-07	1.42981E-09	1.42981E-08
39	GRID	545350	4163800	6.94E-04	2.04E-05	1.01772E-07	1.45389E-09	1.45389E-08
15	GRID	545100	4163750	6.97E-04	1.65E-05	1.01537E-07	1.45053E-09	1.45053E-08
12	GRID	544950	4163750	7.01E-04	1.77E-05	1.02346E-07	1.46209E-09	1.46209E-08
14	GRID	545050	4163750	7.03E-04	1.66E-05	1.025E-07	1.46429E-09	1.46429E-08
60	GRID	545450	4163850	7.03E-04	2.02E-05	1.03015E-07	1.47164E-09	1.47164E-08
13	GRID	545000	4163750	7.08E-04	1.71E-05	1.03209E-07	1.47442E-09	1.47442E-08
352	GRID	545100	4165500	7.08E-04	1.24E-05	1.02544E-07	1.46491E-09	1.46491E-08
394	GRID	545300	4165600	7.08E-04	1.55E-05	1.02983E-07	1.47119E-09	1.47119E-08
373	GRID	545200	4165550	7.14E-04	1.41E-05	1.03733E-07	1.4819E-09	1.4819E-08
81	GRID	545550	4163900	7.06E-04	4.22E-05	1.06471E-07	1.52101E-09	1.52101E-08
311	GRID	544950	4165400	7.19E-04	1.04E-05	1.03839E-07	1.48342E-09	1.48342E-08
231	GRID	544750	4165200	7.23E-04	7.34E-06	1.04036E-07	1.48623E-09	1.48623E-08
395	GRID	545350	4165600	7.32E-04	1.67E-05	1.06632E-07	1.52332E-09	1.52332E-08
38	GRID	545300	4163800	7.37E-04	2.05E-05	1.07818E-07	1.54026E-09	1.54026E-08
291	GRID	544900	4165350	7.41E-04	9.79E-06	1.0692E-07	1.52744E-09	1.52744E-08
332	GRID	545050	4165450	7.41E-04	1.19E-05	1.07222E-07	1.53174E-09	1.53174E-08
251	GRID	544800	4165250	7.50E-04	7.77E-06	1.07901E-07	1.54144E-09	1.54144E-08
374	GRID	545250	4165550	7.48E-04	1.54E-05	1.08675E-07	1.5525E-09	1.5525E-08
353	GRID	545150	4165500	7.50E-04	1.38E-05	1.08753E-07	1.55362E-09	1.55362E-08
59	GRID	545400	4163850	7.50E-04	2.28E-05	1.10046E-07	1.57209E-09	1.57209E-08
271	GRID	544850	4165300	7.55E-04	8.78E-06	1.08679E-07	1.55255E-09	1.55255E-08
396	GRID	545400	4165600	7.52E-04	1.77E-05	1.09635E-07	1.56621E-09	1.56621E-08
80	GRID	545500	4163900	7.50E-04	3.43E-05	1.11678E-07	1.59541E-09	1.59541E-08
193	GRID	544700	4165100	7.66E-04	8.39E-06	1.10207E-07	1.57438E-09	1.57438E-08
397	GRID	545450	4165600	7.66E-04	1.88E-05	1.11687E-07	1.59553E-09	1.59553E-08
312	GRID	545000	4165400	7.75E-04	1.15E-05	1.11912E-07	1.59875E-09	1.59875E-08
398	GRID	545500	4165600	7.70E-04	1.98E-05	1.12471E-07	1.60674E-09	1.60674E-08
399	GRID	545550	4165600	7.70E-04	2.08E-05	1.1261E-07	1.60871E-09	1.60871E-08
375	GRID	545300	4165550	7.79E-04	1.68E-05	1.133E-07	1.61857E-09	1.61857E-08
37	GRID	545250	4163800	7.79E-04	2.09E-05	1.1389E-07	1.627E-09	1.627E-08
333	GRID	545100	4165450	7.90E-04	1.33E-05	1.14394E-07	1.63421E-09	1.63421E-08
354	GRID	545200	4165500	7.92E-04	1.52E-05	1.14975E-07	1.6425E-09	1.6425E-08
79	GRID	545450	4163900	8.01E-04	2.73E-05	1.17963E-07	1.68518E-09	1.68518E-08
100	GRID	545550	4163950	7.90E-04	5.96E-05	1.20986E-07	1.72837E-09	1.72837E-08
292	GRID	544950	4165350	8.06E-04	1.10E-05	1.16286E-07	1.66123E-09	1.66123E-08
376	GRID	545350	4165550	8.04E-04	1.80E-05	1.16961E-07	1.67088E-09	1.67088E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
58	GRID	545350	4163850	8.04E-04	2.58E-05	1.18066E-07	1.68666E-09	1.68666E-08
212	GRID	544750	4165150	8.17E-04	7.95E-06	1.17433E-07	1.67761E-09	1.67761E-08
36	GRID	545200	4163800	8.21E-04	2.07E-05	1.19886E-07	1.71265E-09	1.71265E-08
377	GRID	545400	4165550	8.21E-04	1.92E-05	1.19672E-07	1.7096E-09	1.7096E-08
380	GRID	545550	4165550	8.24E-04	2.28E-05	1.20491E-07	1.7213E-09	1.7213E-08
313	GRID	545050	4165400	8.30E-04	1.28E-05	1.20023E-07	1.71462E-09	1.71462E-08
355	GRID	545250	4165500	8.28E-04	1.67E-05	1.20259E-07	1.71798E-09	1.71798E-08
378	GRID	545450	4165550	8.30E-04	2.04E-05	1.21103E-07	1.73004E-09	1.73004E-08
379	GRID	545500	4165550	8.30E-04	2.16E-05	1.21279E-07	1.73255E-09	1.73255E-08
272	GRID	544900	4165300	8.35E-04	1.02E-05	1.20293E-07	1.71847E-09	1.71847E-08
334	GRID	545150	4165450	8.39E-04	1.48E-05	1.2158E-07	1.73685E-09	1.73685E-08
232	GRID	544800	4165200	8.48E-04	8.14E-06	1.21897E-07	1.74138E-09	1.74138E-08
252	GRID	544850	4165250	8.53E-04	9.08E-06	1.22665E-07	1.75236E-09	1.75236E-08
99	GRID	545500	4163950	8.46E-04	5.37E-05	1.28067E-07	1.82953E-09	1.82953E-08
356	GRID	545300	4165500	8.59E-04	1.82E-05	1.24909E-07	1.78441E-09	1.78441E-08
35	GRID	545150	4163800	8.59E-04	2.02E-05	1.25198E-07	1.78854E-09	1.78854E-08
78	GRID	545400	4163900	8.59E-04	3.08E-05	1.26704E-07	1.81006E-09	1.81006E-08
175	GRID	544700	4165050	8.66E-04	9.44E-06	1.24617E-07	1.78024E-09	1.78024E-08
57	GRID	545300	4163850	8.64E-04	2.57E-05	1.2661E-07	1.80871E-09	1.80871E-08
293	GRID	545000	4165350	8.73E-04	1.23E-05	1.25982E-07	1.79974E-09	1.79974E-08
361	GRID	545550	4165500	8.79E-04	2.49E-05	1.28715E-07	1.83879E-09	1.83879E-08
335	GRID	545200	4165450	8.84E-04	1.64E-05	1.28144E-07	1.83062E-09	1.83062E-08
357	GRID	545350	4165500	8.81E-04	1.96E-05	1.28279E-07	1.83255E-09	1.83255E-08
314	GRID	545100	4165400	8.88E-04	1.43E-05	1.28476E-07	1.83537E-09	1.83537E-08
360	GRID	545500	4165500	8.93E-04	2.35E-05	1.30428E-07	1.86326E-09	1.86326E-08
358	GRID	545400	4165500	8.95E-04	2.09E-05	1.30368E-07	1.86241E-09	1.86241E-08
34	GRID	545100	4163800	8.97E-04	2.01E-05	1.30572E-07	1.86532E-09	1.86532E-08
655	GRID	544600	4164900	8.99E-04	1.62E-05	1.30337E-07	1.86195E-09	1.86195E-08
359	GRID	545450	4165500	8.99E-04	2.23E-05	1.31203E-07	1.87433E-09	1.87433E-08
273	GRID	544950	4165300	9.13E-04	1.18E-05	1.3161E-07	1.88015E-09	1.88015E-08
98	GRID	545450	4163950	9.08E-04	3.93E-05	1.34894E-07	1.92706E-09	1.92706E-08
336	GRID	545250	4165450	9.22E-04	1.81E-05	1.33769E-07	1.91099E-09	1.91099E-08
194	GRID	544750	4165100	9.30E-04	8.75E-06	1.33709E-07	1.91012E-09	1.91012E-08
56	GRID	545250	4163850	9.28E-04	2.59E-05	1.35838E-07	1.94054E-09	1.94054E-08
77	GRID	545350	4163900	9.26E-04	3.35E-05	1.366E-07	1.95143E-09	1.95143E-08
33	GRID	545050	4163800	9.33E-04	2.06E-05	1.35718E-07	1.93883E-09	1.93883E-08
294	GRID	545050	4165350	9.39E-04	1.38E-05	1.35689E-07	1.93842E-09	1.93842E-08
342	GRID	545550	4165450	9.37E-04	2.73E-05	1.37306E-07	1.96151E-09	1.96151E-08
315	GRID	545150	4165400	9.42E-04	1.61E-05	1.36333E-07	1.94761E-09	1.94761E-08
253	GRID	544900	4165250	9.50E-04	1.08E-05	1.36847E-07	1.95496E-09	1.95496E-08
337	GRID	545300	4165450	9.50E-04	1.98E-05	1.38128E-07	1.97325E-09	1.97325E-08
341	GRID	545500	4165450	9.59E-04	2.59E-05	1.40274E-07	2.00392E-09	2.00392E-08
213	GRID	544800	4165150	9.68E-04	8.67E-06	1.39085E-07	1.98692E-09	1.98692E-08
32	GRID	545000	4163800	9.66E-04	2.16E-05	1.4061E-07	2.00871E-09	2.00871E-08
233	GRID	544850	4165200	9.73E-04	9.44E-06	1.39828E-07	1.99754E-09	1.99754E-08
338	GRID	545350	4165450	9.70E-04	2.13E-05	1.41206E-07	2.01722E-09	2.01722E-08
340	GRID	545450	4165450	9.73E-04	2.44E-05	1.41962E-07	2.02803E-09	2.02803E-08
339	GRID	545400	4165450	9.77E-04	2.29E-05	1.42382E-07	2.03403E-09	2.03403E-08
157	GRID	544700	4165000	9.88E-04	1.09E-05	1.42259E-07	2.03228E-09	2.03228E-08
97	GRID	545400	4163950	9.79E-04	4.41E-05	1.45713E-07	2.08161E-09	2.08161E-08
274	GRID	545000	4165300	9.93E-04	1.32E-05	1.4322E-07	2.04599E-09	2.04599E-08
316	GRID	545200	4165400	9.91E-04	1.78E-05	1.43556E-07	2.05079E-09	2.05079E-08
31	GRID	544950	4163800	9.97E-04	2.27E-05	1.45197E-07	2.07424E-09	2.07424E-08
29	GRID	544850	4163800	9.99E-04	2.35E-05	1.45639E-07	2.08056E-09	2.08056E-08
55	GRID	545200	4163850	9.99E-04	2.56E-05	1.45928E-07	2.08469E-09	2.08469E-08
323	GRID	545550	4165400	9.97E-04	3.02E-05	1.46277E-07	2.08967E-09	2.08967E-08
295	GRID	545100	4165350	1.01E-03	1.54E-05	1.45435E-07	2.07764E-09	2.07764E-08
76	GRID	545300	4163900	1.01E-03	3.33E-05	1.47984E-07	2.11405E-09	2.11405E-08
30	GRID	544900	4163800	1.01E-03	2.34E-05	1.47516E-07	2.10736E-09	2.10736E-08
317	GRID	545250	4165400	1.03E-03	1.97E-05	1.49206E-07	2.13152E-09	2.13152E-08
322	GRID	545500	4165400	1.03E-03	2.87E-05	1.50487E-07	2.14982E-09	2.14982E-08
254	GRID	544950	4165250	1.05E-03	1.25E-05	1.50725E-07	2.15321E-09	2.15321E-08
321	GRID	545450	4165400	1.05E-03	2.70E-05	1.53418E-07	2.19168E-09	2.19168E-08
318	GRID	545300	4165400	1.06E-03	2.16E-05	1.53285E-07	2.18979E-09	2.18979E-08
296	GRID	545150	4165350	1.07E-03	1.74E-05	1.54267E-07	2.20382E-09	2.20382E-08
304	GRID	545550	4165350	1.06E-03	3.36E-05	1.55944E-07	2.22777E-09	2.22777E-08
319	GRID	545350	4165400	1.07E-03	2.35E-05	1.55134E-07	2.21619E-09	2.21619E-08
320	GRID	545400	4165400	1.07E-03	2.52E-05	1.55385E-07	2.21978E-09	2.21978E-08
656	GRID	544650	4164900	1.07E-03	1.59E-05	1.54371E-07	2.2053E-09	2.2053E-08
275	GRID	545050	4165300	1.07E-03	1.49E-05	1.54866E-07	2.21238E-09	2.21238E-08
176	GRID	544750	4165050	1.08E-03	9.79E-06	1.54455E-07	2.2065E-09	2.2065E-08
96	GRID	545350	4163950	1.07E-03	4.59E-05	1.58323E-07	2.26175E-09	2.26175E-08
54	GRID	545150	4163850	1.08E-03	2.54E-05	1.56677E-07	2.23825E-09	2.23825E-08
234	GRID	544900	4165200	1.09E-03	1.13E-05	1.57204E-07	2.24577E-09	2.24577E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
75	GRID	545250	4163900	1.10E-03	3.34E-05	1.60989E-07	2.29984E-09	2.29984E-08
303	GRID	545500	4165350	1.10E-03	3.18E-05	1.61397E-07	2.30567E-09	2.30567E-08
297	GRID	545200	4165350	1.12E-03	1.94E-05	1.61845E-07	2.31207E-09	2.31207E-08
195	GRID	544800	4165100	1.12E-03	9.35E-06	1.61364E-07	2.3052E-09	2.3052E-08
214	GRID	544850	4165150	1.13E-03	9.97E-06	1.61769E-07	2.31098E-09	2.31098E-08
489	GRID	545400	4164000	1.11E-03	6.95E-05	1.68342E-07	2.40489E-09	2.40489E-08
285	GRID	545550	4165300	1.13E-03	3.75E-05	1.65686E-07	2.36694E-09	2.36694E-08
139	GRID	544700	4164950	1.14E-03	1.29E-05	1.64401E-07	2.34859E-09	2.34859E-08
302	GRID	545450	4165350	1.14E-03	2.99E-05	1.65874E-07	2.36963E-09	2.36963E-08
255	GRID	545000	4165250	1.14E-03	1.44E-05	1.64615E-07	2.35164E-09	2.35164E-08
276	GRID	545100	4165300	1.15E-03	1.68E-05	1.65905E-07	2.37007E-09	2.37007E-08
298	GRID	545250	4165350	1.15E-03	2.16E-05	1.67229E-07	2.38898E-09	2.38898E-08
642	GRID	544600	4164850	1.16E-03	1.92E-05	1.67207E-07	2.38867E-09	2.38867E-08
53	GRID	545100	4163850	1.16E-03	2.60E-05	1.6849E-07	2.40701E-09	2.40701E-08
301	GRID	545400	4165350	1.16E-03	2.80E-05	1.69084E-07	2.41548E-09	2.41548E-08
299	GRID	545300	4165350	1.17E-03	2.37E-05	1.70065E-07	2.42951E-09	2.42951E-08
95	GRID	545300	4163950	1.17E-03	4.56E-05	1.72545E-07	2.46493E-09	2.46493E-08
300	GRID	545350	4165350	1.17E-03	2.58E-05	1.70684E-07	2.43834E-09	2.43834E-08
284	GRID	545500	4165300	1.18E-03	3.55E-05	1.72699E-07	2.46712E-09	2.46712E-08
266	GRID	545550	4165250	1.20E-03	4.21E-05	1.7648E-07	2.52114E-09	2.52114E-08
74	GRID	545200	4163900	1.20E-03	3.37E-05	1.76238E-07	2.51768E-09	2.51768E-08
235	GRID	544950	4165200	1.21E-03	1.34E-05	1.74617E-07	2.49454E-09	2.49454E-08
277	GRID	545150	4165300	1.22E-03	1.90E-05	1.75725E-07	2.51036E-09	2.51036E-08
283	GRID	545450	4165300	1.22E-03	3.34E-05	1.79052E-07	2.55789E-09	2.55789E-08
488	GRID	545350	4164000	1.22E-03	6.90E-05	1.83161E-07	2.61659E-09	2.61659E-08
256	GRID	545050	4165250	1.24E-03	1.62E-05	1.78505E-07	2.55007E-09	2.55007E-08
52	GRID	545050	4163850	1.24E-03	2.73E-05	1.81025E-07	2.58608E-09	2.58608E-08
158	GRID	544750	4165000	1.26E-03	1.11E-05	1.81263E-07	2.58947E-09	2.58947E-08
265	GRID	545500	4165250	1.26E-03	3.99E-05	1.84735E-07	2.63907E-09	2.63907E-08
278	GRID	545200	4165300	1.26E-03	2.13E-05	1.83036E-07	2.6148E-09	2.6148E-08
282	GRID	545400	4165300	1.26E-03	3.11E-05	1.84113E-07	2.63018E-09	2.63018E-08
215	GRID	544900	4165150	1.28E-03	1.18E-05	1.83898E-07	2.62712E-09	2.62712E-08
247	GRID	545550	4165200	1.27E-03	4.74E-05	1.88008E-07	2.68582E-09	2.68582E-08
279	GRID	545250	4165300	1.29E-03	2.38E-05	1.87507E-07	2.67868E-09	2.67868E-08
281	GRID	545350	4165300	1.29E-03	2.87E-05	1.87577E-07	2.67967E-09	2.67967E-08
502	GRID	545400	4164050	1.26E-03	1.33E-04	1.98006E-07	2.82865E-09	2.82865E-08
94	GRID	545250	4163950	1.29E-03	4.71E-05	1.90188E-07	2.71697E-09	2.71697E-08
280	GRID	545300	4165300	1.30E-03	2.63E-05	1.8881E-07	2.69728E-09	2.69728E-08
177	GRID	544800	4165050	1.32E-03	1.04E-05	1.90035E-07	2.71479E-09	2.71479E-08
196	GRID	544850	4165100	1.32E-03	1.06E-05	1.90061E-07	2.71515E-09	2.71515E-08
257	GRID	545100	4165250	1.32E-03	1.83E-05	1.91165E-07	2.73094E-09	2.73094E-08
264	GRID	545450	4165250	1.32E-03	3.76E-05	1.92952E-07	2.75646E-09	2.75646E-08
73	GRID	545150	4163900	1.33E-03	3.47E-05	1.93805E-07	2.76864E-09	2.76864E-08
236	GRID	545000	4165200	1.33E-03	1.55E-05	1.92031E-07	2.7433E-09	2.7433E-08
51	GRID	545000	4163850	1.34E-03	2.87E-05	1.94219E-07	2.77456E-09	2.77456E-08
246	GRID	545500	4165200	1.34E-03	4.52E-05	1.97834E-07	2.82621E-09	2.82621E-08
127	GRID	544700	4164900	1.36E-03	1.55E-05	1.95517E-07	2.7931E-09	2.7931E-08
657	GRID	544700	4164900	1.36E-03	1.55E-05	1.95517E-07	2.7931E-09	2.7931E-08
487	GRID	545300	4164000	1.34E-03	7.23E-05	2.01702E-07	2.88145E-09	2.88145E-08
228	GRID	545550	4165150	1.35E-03	5.37E-05	2.00003E-07	2.85719E-09	2.85719E-08
643	GRID	544650	4164850	1.37E-03	1.93E-05	1.97958E-07	2.82798E-09	2.82798E-08
263	GRID	545400	4165250	1.37E-03	3.49E-05	2.00181E-07	2.85972E-09	2.85972E-08
258	GRID	545150	4165250	1.39E-03	2.08E-05	2.01024E-07	2.87177E-09	2.87177E-08
262	GRID	545350	4165250	1.42E-03	3.22E-05	2.06129E-07	2.94471E-09	2.94471E-08
245	GRID	545450	4165200	1.42E-03	4.25E-05	2.07915E-07	2.97022E-09	2.97022E-08
501	GRID	545350	4164050	1.38E-03	1.44E-04	2.17576E-07	3.10822E-09	3.10822E-08
216	GRID	544950	4165150	1.43E-03	1.43E-05	2.05799E-07	2.93999E-09	2.93999E-08
259	GRID	545200	4165250	1.44E-03	2.35E-05	2.07751E-07	2.96787E-09	2.96787E-08
93	GRID	545200	4163950	1.43E-03	5.01E-05	2.11213E-07	3.01733E-09	3.01733E-08
50	GRID	544950	4163850	1.44E-03	2.97E-05	2.09581E-07	2.99401E-09	2.99401E-08
237	GRID	545050	4165200	1.45E-03	1.77E-05	2.08507E-07	2.97867E-09	2.97867E-08
261	GRID	545300	4165250	1.44E-03	2.94E-05	2.0953E-07	2.99329E-09	2.99329E-08
210	GRID	545550	4165100	1.43E-03	6.12E-05	2.12795E-07	3.03993E-09	3.03993E-08
227	GRID	545500	4165150	1.44E-03	5.13E-05	2.12023E-07	3.0289E-09	3.0289E-08
260	GRID	545250	4165250	1.45E-03	2.65E-05	2.10384E-07	3.00548E-09	3.00548E-08
72	GRID	545100	4163900	1.47E-03	3.62E-05	2.14617E-07	3.06596E-09	3.06596E-08
244	GRID	545400	4165200	1.49E-03	3.95E-05	2.17629E-07	3.10899E-09	3.10899E-08
140	GRID	544750	4164950	1.51E-03	1.30E-05	2.16702E-07	3.09574E-09	3.09574E-08
486	GRID	545250	4164000	1.50E-03	8.03E-05	2.2471E-07	3.21014E-09	3.21014E-08
197	GRID	544900	4165100	1.52E-03	1.25E-05	2.18858E-07	3.12654E-09	3.12654E-08
192	GRID	545550	4165050	1.52E-03	7.00E-05	2.25776E-07	3.22537E-09	3.22537E-08
226	GRID	545450	4165150	1.52E-03	4.84E-05	2.23968E-07	3.19954E-09	3.19954E-08
238	GRID	545100	4165200	1.54E-03	2.01E-05	2.22156E-07	3.17365E-09	3.17365E-08
209	GRID	545500	4165100	1.53E-03	5.87E-05	2.26704E-07	3.23863E-09	3.23863E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
243	GRID	545350	4165200	1.55E-03	3.63E-05	2.2605E-07	3.22929E-09	3.22929E-08
49	GRID	544900	4163850	1.57E-03	3.02E-05	2.28024E-07	3.25748E-09	3.25748E-08
217	GRID	545000	4165150	1.58E-03	1.69E-05	2.27091E-07	3.24416E-09	3.24416E-08
500	GRID	545300	4164050	1.54E-03	1.62E-04	2.42078E-07	3.45826E-09	3.45826E-08
178	GRID	544850	4165050	1.59E-03	1.15E-05	2.28214E-07	3.2602E-09	3.2602E-08
159	GRID	544800	4165000	1.60E-03	1.17E-05	2.28885E-07	3.26979E-09	3.26979E-08
629	GRID	544600	4164800	1.59E-03	2.27E-05	2.30125E-07	3.2875E-09	3.2875E-08
239	GRID	545150	4165200	1.60E-03	2.30E-05	2.31443E-07	3.30633E-09	3.30633E-08
242	GRID	545300	4165200	1.60E-03	3.30E-05	2.32545E-07	3.32207E-09	3.32207E-08
174	GRID	545550	4165000	1.60E-03	8.06E-05	2.38691E-07	3.40987E-09	3.40987E-08
92	GRID	545150	4163950	1.61E-03	5.20E-05	2.36525E-07	3.37892E-09	3.37892E-08
225	GRID	545400	4165150	1.61E-03	4.51E-05	2.36166E-07	3.37381E-09	3.37381E-08
240	GRID	545200	4165200	1.63E-03	2.62E-05	2.36015E-07	3.37164E-09	3.37164E-08
241	GRID	545250	4165200	1.63E-03	2.95E-05	2.36175E-07	3.37393E-09	3.37393E-08
191	GRID	545500	4165050	1.63E-03	6.77E-05	2.42245E-07	3.46065E-09	3.46065E-08
208	GRID	545450	4165100	1.64E-03	5.56E-05	2.41476E-07	3.44966E-09	3.44966E-08
71	GRID	545050	4163900	1.65E-03	3.77E-05	2.40182E-07	3.43117E-09	3.43117E-08
156	GRID	545550	4164950	1.67E-03	9.35E-05	2.50665E-07	3.58093E-09	3.58093E-08
224	GRID	545350	4165150	1.70E-03	4.14E-05	2.47681E-07	3.5383E-09	3.5383E-08
485	GRID	545200	4164000	1.68E-03	8.35E-05	2.51781E-07	3.59688E-09	3.59688E-08
218	GRID	545050	4165150	1.71E-03	1.95E-05	2.46152E-07	3.51646E-09	3.51646E-08
198	GRID	544950	4165100	1.72E-03	1.53E-05	2.47134E-07	3.53048E-09	3.53048E-08
644	GRID	544700	4164850	1.72E-03	1.90E-05	2.47991E-07	3.54272E-09	3.54272E-08
514	GRID	545350	4164100	1.56E-03	5.32E-04	2.98488E-07	4.26412E-09	4.26412E-08
173	GRID	545500	4165000	1.73E-03	7.86E-05	2.57416E-07	3.67737E-09	3.67737E-08
207	GRID	545400	4165100	1.75E-03	5.19E-05	2.56464E-07	3.66377E-09	3.66377E-08
499	GRID	545250	4164050	1.73E-03	1.57E-04	2.67944E-07	3.82777E-09	3.82777E-08
190	GRID	545450	4165050	1.76E-03	6.44E-05	2.59831E-07	3.71188E-09	3.71188E-08
223	GRID	545300	4165150	1.77E-03	3.74E-05	2.57891E-07	3.68415E-09	3.68415E-08
219	GRID	545100	4165150	1.80E-03	2.23E-05	2.59863E-07	3.71233E-09	3.71233E-08
222	GRID	545250	4165150	1.83E-03	3.33E-05	2.65236E-07	3.78908E-09	3.78908E-08
91	GRID	545100	4163950	1.83E-03	5.29E-05	2.6834E-07	3.83343E-09	3.83343E-08
155	GRID	545500	4164950	1.82E-03	9.17E-05	2.72597E-07	3.89424E-09	3.89424E-08
128	GRID	544750	4164900	1.85E-03	1.54E-05	2.65222E-07	3.78889E-09	3.78889E-08
658	GRID	544750	4164900	1.85E-03	1.54E-05	2.65222E-07	3.78889E-09	3.78889E-08
220	GRID	545150	4165150	1.85E-03	2.56E-05	2.673E-07	3.81857E-09	3.81857E-08
179	GRID	544900	4165050	1.86E-03	1.33E-05	2.66822E-07	3.81174E-09	3.81174E-08
221	GRID	545200	4165150	1.86E-03	2.94E-05	2.6879E-07	3.83986E-09	3.83986E-08
513	GRID	545300	4164100	1.75E-03	3.66E-04	3.01187E-07	4.30267E-09	4.30267E-08
206	GRID	545350	4165100	1.86E-03	4.75E-05	2.71694E-07	3.88134E-09	3.88134E-08
70	GRID	545000	4163900	1.87E-03	3.89E-05	2.71097E-07	3.87281E-09	3.87281E-08
172	GRID	545450	4165000	1.88E-03	7.51E-05	2.78476E-07	3.97822E-09	3.97822E-08
199	GRID	545000	4165100	1.90E-03	1.84E-05	2.73571E-07	3.90816E-09	3.90816E-08
189	GRID	545400	4165050	1.89E-03	6.01E-05	2.78242E-07	3.97489E-09	3.97489E-08
484	GRID	545150	4164000	1.92E-03	8.18E-05	2.84804E-07	4.06864E-09	4.06864E-08
630	GRID	544650	4164800	1.92E-03	2.32E-05	2.77101E-07	3.95859E-09	3.95859E-08
141	GRID	544800	4164950	1.98E-03	1.34E-05	2.83947E-07	4.05639E-09	4.05639E-08
160	GRID	544850	4165000	1.97E-03	1.27E-05	2.81945E-07	4.02779E-09	4.02779E-08
205	GRID	545300	4165100	1.96E-03	4.29E-05	2.85605E-07	4.08008E-09	4.08008E-08
498	GRID	545200	4164050	1.96E-03	1.43E-04	2.9921E-07	4.27442E-09	4.27442E-08
154	GRID	545450	4164950	1.99E-03	8.82E-05	2.96496E-07	4.23565E-09	4.23565E-08
188	GRID	545350	4165050	2.03E-03	5.52E-05	2.97504E-07	4.25006E-09	4.25006E-08
200	GRID	545050	4165100	2.04E-03	2.15E-05	2.93975E-07	4.19965E-09	4.19965E-08
171	GRID	545400	4165000	2.04E-03	7.06E-05	3.00956E-07	4.29937E-09	4.29937E-08
204	GRID	545250	4165100	2.05E-03	3.80E-05	2.97591E-07	4.2513E-09	4.2513E-08
512	GRID	545250	4164100	1.97E-03	2.78E-04	3.20638E-07	4.58054E-09	4.58054E-08
528	GRID	545350	4164150	1.76E-03	9.26E-04	3.82499E-07	5.46426E-09	5.46426E-08
180	GRID	544950	4165050	2.12E-03	1.63E-05	3.04009E-07	4.34299E-09	4.34299E-08
201	GRID	545100	4165100	2.13E-03	2.49E-05	3.06178E-07	4.37397E-09	4.37397E-08
203	GRID	545200	4165100	2.12E-03	3.32E-05	3.06103E-07	4.3729E-09	4.3729E-08
69	GRID	544950	4163900	2.13E-03	3.95E-05	3.08579E-07	4.40827E-09	4.40827E-08
90	GRID	545050	4163950	2.13E-03	5.34E-05	3.10233E-07	4.4319E-09	4.4319E-08
202	GRID	545150	4165100	2.15E-03	2.87E-05	3.09582E-07	4.4226E-09	4.4226E-08
527	GRID	545300	4164150	1.99E-03	5.65E-04	3.63153E-07	5.1879E-09	5.1879E-08
187	GRID	545300	4165050	2.17E-03	4.97E-05	3.16361E-07	4.51944E-09	4.51944E-08
153	GRID	545400	4164950	2.19E-03	8.35E-05	3.23717E-07	4.62453E-09	4.62453E-08
170	GRID	545350	4165000	2.22E-03	6.48E-05	3.25175E-07	4.64536E-09	4.64536E-08
483	GRID	545100	4164000	2.22E-03	7.88E-05	3.27805E-07	4.68293E-09	4.68293E-08
497	GRID	545150	4164050	2.25E-03	1.28E-04	3.38272E-07	4.83245E-09	4.83245E-08
186	GRID	545250	4165050	2.29E-03	4.38E-05	3.32644E-07	4.75206E-09	4.75206E-08
181	GRID	545000	4165050	2.34E-03	2.01E-05	3.35605E-07	4.79436E-09	4.79436E-08
511	GRID	545200	4164100	2.27E-03	2.24E-04	3.55126E-07	5.07323E-09	5.07323E-08
617	GRID	544600	4164750	2.31E-03	2.67E-05	3.33378E-07	4.76254E-09	4.76254E-08
161	GRID	544900	4165000	2.34E-03	1.45E-05	3.34801E-07	4.78288E-09	4.78288E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
645	GRID	544750	4164850	2.36E-03	1.88E-05	3.38586E-07	4.83694E-09	4.83694E-08
526	GRID	545250	4164150	2.27E-03	4.03E-04	3.80614E-07	5.43734E-09	5.43734E-08
169	GRID	545300	4165000	2.40E-03	5.83E-05	3.50548E-07	5.00783E-09	5.00783E-08
152	GRID	545350	4164950	2.40E-03	7.71E-05	3.53223E-07	5.04604E-09	5.04604E-08
185	GRID	545200	4165050	2.40E-03	3.80E-05	3.47661E-07	4.96658E-09	4.96658E-08
182	GRID	545050	4165050	2.47E-03	2.40E-05	3.55171E-07	5.07387E-09	5.07387E-08
631	GRID	544700	4164800	2.45E-03	2.35E-05	3.51927E-07	5.02753E-09	5.02753E-08
68	GRID	544900	4163900	2.47E-03	3.94E-05	3.57368E-07	5.10526E-09	5.10526E-08
184	GRID	545150	4165050	2.49E-03	3.26E-05	3.59571E-07	5.13672E-09	5.13672E-08
183	GRID	545100	4165050	2.52E-03	2.80E-05	3.62087E-07	5.17267E-09	5.17267E-08
541	GRID	545300	4164200	2.25E-03	8.38E-04	4.39344E-07	6.27634E-09	6.27634E-08
142	GRID	544850	4164950	2.54E-03	1.44E-05	3.6331E-07	5.19014E-09	5.19014E-08
89	GRID	545000	4163950	2.54E-03	5.34E-05	3.68859E-07	5.26942E-09	5.26942E-08
129	GRID	544800	4164900	2.56E-03	1.58E-05	3.66679E-07	5.23828E-09	5.23828E-08
659	GRID	544800	4164900	2.56E-03	1.58E-05	3.66679E-07	5.23828E-09	5.23828E-08
168	GRID	545250	4165000	2.58E-03	5.12E-05	3.74896E-07	5.35565E-09	5.35565E-08
151	GRID	545300	4164950	2.65E-03	6.93E-05	3.86976E-07	5.52824E-09	5.52824E-08
482	GRID	545050	4164000	2.65E-03	7.61E-05	3.87943E-07	5.54205E-09	5.54205E-08
496	GRID	545100	4164050	2.65E-03	1.16E-04	3.93556E-07	5.62222E-09	5.62222E-08
162	GRID	544950	4165000	2.67E-03	1.76E-05	3.82788E-07	5.4684E-09	5.4684E-08
510	GRID	545150	4164100	2.63E-03	1.87E-04	4.00557E-07	5.72224E-09	5.72224E-08
525	GRID	545200	4164150	2.60E-03	3.14E-04	4.15467E-07	5.93525E-09	5.93525E-08
167	GRID	545200	4165000	2.76E-03	4.41E-05	3.9923E-07	5.70329E-09	5.70329E-08
540	GRID	545250	4164200	2.58E-03	5.82E-04	4.50467E-07	6.43525E-09	6.43525E-08
150	GRID	545250	4164950	2.89E-03	6.08E-05	4.20617E-07	6.00882E-09	6.00882E-08
166	GRID	545150	4165000	2.89E-03	3.76E-05	4.17315E-07	5.96165E-09	5.96165E-08
163	GRID	545000	4165000	2.92E-03	2.20E-05	4.18274E-07	5.97535E-09	5.97535E-08
618	GRID	544650	4164750	2.98E-03	2.79E-05	4.2861E-07	6.123E-09	6.123E-08
165	GRID	545100	4165000	2.98E-03	3.19E-05	4.29188E-07	6.13125E-09	6.13125E-08
164	GRID	545050	4165000	3.00E-03	2.69E-05	4.31641E-07	6.1663E-09	6.1663E-08
553	GRID	545300	4164250	2.54E-03	1.47E-03	5.7094E-07	8.15628E-09	8.15628E-08
143	GRID	544900	4164950	3.07E-03	1.61E-05	4.39616E-07	6.28023E-09	6.28023E-08
149	GRID	545200	4164950	3.14E-03	5.19E-05	4.5422E-07	6.48886E-09	6.48886E-08
524	GRID	545150	4164150	3.05E-03	2.55E-04	4.70435E-07	6.7205E-09	6.7205E-08
539	GRID	545200	4164200	3.00E-03	4.39E-04	4.90338E-07	7.00483E-09	7.00483E-08
88	GRID	544950	4163950	3.14E-03	5.30E-05	4.54371E-07	6.49102E-09	6.49102E-08
509	GRID	545100	4164100	3.12E-03	1.61E-04	4.66633E-07	6.66618E-09	6.66618E-08
138	GRID	545250	4164900	3.21E-03	7.33E-05	4.66766E-07	6.66808E-09	6.66808E-08
495	GRID	545050	4164050	3.18E-03	1.07E-04	4.68355E-07	6.69079E-09	6.69079E-08
552	GRID	545250	4164250	2.94E-03	8.91E-04	5.45115E-07	7.78736E-09	7.78736E-08
668	GRID	545250	4164900	3.21E-03	7.33E-05	4.66766E-07	6.66808E-09	6.66808E-08
481	GRID	545000	4164000	3.27E-03	7.35E-05	4.7631E-07	6.80443E-09	6.80443E-08
148	GRID	545150	4164950	3.36E-03	4.38E-05	4.84755E-07	6.92507E-09	6.92507E-08
632	GRID	544750	4164800	3.38E-03	2.34E-05	4.85011E-07	6.92873E-09	6.92873E-08
130	GRID	544850	4164900	3.47E-03	1.67E-05	4.96733E-07	7.09618E-09	7.09618E-08
607	GRID	544600	4164700	3.45E-03	3.20E-05	4.95749E-07	7.08212E-09	7.08212E-08
660	GRID	544850	4164900	3.47E-03	1.67E-05	4.96733E-07	7.09618E-09	7.09618E-08
144	GRID	544950	4164950	3.49E-03	1.93E-05	5.00279E-07	7.14684E-09	7.14684E-08
137	GRID	545200	4164900	3.54E-03	6.23E-05	5.12731E-07	7.32473E-09	7.32473E-08
147	GRID	545100	4164950	3.54E-03	3.68E-05	5.09102E-07	7.27289E-09	7.27289E-08
667	GRID	545200	4164900	3.54E-03	6.23E-05	5.12731E-07	7.32473E-09	7.32473E-08
646	GRID	544800	4164850	3.56E-03	1.90E-05	5.09735E-07	7.28193E-09	7.28193E-08
551	GRID	545200	4164250	3.43E-03	6.20E-04	5.76287E-07	8.23267E-09	8.23267E-08
538	GRID	545150	4164200	3.54E-03	3.44E-04	5.52833E-07	7.89762E-09	7.89762E-08
146	GRID	545050	4164950	3.67E-03	3.04E-05	5.27212E-07	7.5316E-09	7.5316E-08
145	GRID	545000	4164950	3.67E-03	2.43E-05	5.26346E-07	7.51923E-09	7.51923E-08
523	GRID	545100	4164150	3.65E-03	2.14E-04	5.50222E-07	7.86031E-09	7.86031E-08
563	GRID	545250	4164300	3.29E-03	1.38E-03	6.64874E-07	9.4982E-09	9.4982E-08
508	GRID	545050	4164100	3.76E-03	1.43E-04	5.55896E-07	7.94138E-09	7.94138E-08
136	GRID	545150	4164900	3.90E-03	5.19E-05	5.61966E-07	8.02808E-09	8.02808E-08
666	GRID	545150	4164900	3.90E-03	5.19E-05	5.61966E-07	8.02808E-09	8.02808E-08
126	GRID	545200	4164850	3.96E-03	7.62E-05	5.74925E-07	8.21322E-09	8.21322E-08
654	GRID	545200	4164850	3.96E-03	7.62E-05	5.74925E-07	8.21322E-09	8.21322E-08
494	GRID	545000	4164050	4.01E-03	9.97E-05	5.84603E-07	8.35147E-09	8.35147E-08
87	GRID	544900	4163950	4.07E-03	5.18E-05	5.87292E-07	8.38989E-09	8.38989E-08
562	GRID	545200	4164300	3.90E-03	8.91E-04	6.81381E-07	9.73401E-09	9.73401E-08
619	GRID	544700	4164750	4.16E-03	2.87E-05	5.96691E-07	8.52416E-09	8.52416E-08
135	GRID	545100	4164900	4.23E-03	4.29E-05	6.0822E-07	8.68885E-09	8.68885E-08
550	GRID	545150	4164250	4.07E-03	4.63E-04	6.45839E-07	9.22626E-09	9.22626E-08
665	GRID	545100	4164900	4.23E-03	4.29E-05	6.0822E-07	8.68885E-09	8.68885E-08
131	GRID	544900	4164900	4.30E-03	1.84E-05	6.14236E-07	8.7748E-09	8.7748E-08
661	GRID	544900	4164900	4.30E-03	1.84E-05	6.14236E-07	8.7748E-09	8.7748E-08
537	GRID	545100	4164200	4.25E-03	2.81E-04	6.45326E-07	9.21894E-09	9.21894E-08
480	GRID	544950	4164000	4.34E-03	7.09E-05	6.28044E-07	8.97206E-09	8.97206E-08

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
119	GRID	545200	4164800	4.38E-03	9.52E-05	6.37848E-07	9.11211E-09	9.11211E-08
641	GRID	545200	4164800	4.38E-03	9.52E-05	6.37848E-07	9.11211E-09	9.11211E-08
125	GRID	545150	4164850	4.47E-03	6.29E-05	6.45916E-07	9.22737E-09	9.22737E-08
522	GRID	545050	4164150	4.43E-03	1.84E-04	6.56867E-07	9.38381E-09	9.38381E-08
653	GRID	545150	4164850	4.47E-03	6.29E-05	6.45916E-07	9.22737E-09	9.22737E-08
134	GRID	545050	4164900	4.52E-03	3.47E-05	6.48248E-07	9.26069E-09	9.26069E-08
664	GRID	545050	4164900	4.52E-03	3.47E-05	6.48248E-07	9.26069E-09	9.26069E-08
132	GRID	544950	4164900	4.67E-03	2.17E-05	6.68573E-07	9.55104E-09	9.55104E-08
662	GRID	544950	4164900	4.67E-03	2.17E-05	6.68573E-07	9.55104E-09	9.55104E-08
133	GRID	545000	4164900	4.70E-03	2.72E-05	6.72521E-07	9.60744E-09	9.60744E-08
663	GRID	545000	4164900	4.70E-03	2.72E-05	6.72521E-07	9.60744E-09	9.60744E-08
608	GRID	544650	4164700	4.72E-03	3.38E-05	6.76631E-07	9.66616E-09	9.66616E-08
571	GRID	545200	4164350	4.32E-03	1.40E-03	8.14413E-07	1.16345E-08	1.16345E-07
112	GRID	545200	4164750	4.76E-03	1.23E-04	6.95612E-07	9.93732E-09	9.93732E-08
507	GRID	545000	4164100	4.76E-03	1.29E-04	6.96491E-07	9.94988E-09	9.94988E-08
628	GRID	545200	4164750	4.76E-03	1.23E-04	6.95612E-07	9.93732E-09	9.93732E-08
561	GRID	545150	4164300	4.67E-03	6.42E-04	7.56888E-07	1.08127E-08	1.08127E-07
600	GRID	544600	4164650	4.90E-03	3.92E-05	7.02761E-07	1.00394E-08	1.00394E-07
124	GRID	545100	4164850	5.01E-03	5.11E-05	7.20289E-07	1.02898E-08	1.02898E-07
652	GRID	545100	4164850	5.01E-03	5.11E-05	7.20289E-07	1.02898E-08	1.02898E-07
549	GRID	545100	4164250	4.92E-03	3.69E-04	7.52825E-07	1.07546E-08	1.07546E-07
118	GRID	545150	4164800	5.05E-03	7.80E-05	7.30469E-07	1.04353E-08	1.04353E-07
640	GRID	545150	4164800	5.05E-03	7.80E-05	7.30469E-07	1.04353E-08	1.04353E-07
536	GRID	545050	4164200	5.16E-03	2.36E-04	7.68851E-07	1.09836E-08	1.09836E-07
647	GRID	544850	4164850	5.28E-03	1.98E-05	7.53872E-07	1.07696E-08	1.07696E-07
493	GRID	544950	4164050	5.43E-03	9.26E-05	7.86413E-07	1.12345E-08	1.12345E-07
123	GRID	545050	4164850	5.54E-03	4.01E-05	7.94787E-07	1.13541E-08	1.13541E-07
521	GRID	545000	4164150	5.50E-03	1.63E-04	8.05964E-07	1.15138E-08	1.15138E-07
651	GRID	545050	4164850	5.54E-03	4.01E-05	7.94787E-07	1.13541E-08	1.13541E-07
570	GRID	545150	4164350	5.28E-03	1.01E-03	8.95435E-07	1.27919E-08	1.27919E-07
633	GRID	544800	4164800	5.63E-03	2.35E-05	8.0509E-07	1.15013E-08	1.15013E-07
111	GRID	545150	4164750	5.63E-03	9.97E-05	8.15938E-07	1.16563E-08	1.16563E-07
627	GRID	545150	4164750	5.63E-03	9.97E-05	8.15938E-07	1.16563E-08	1.16563E-07
117	GRID	545100	4164800	5.85E-03	6.20E-05	8.42267E-07	1.20324E-08	1.20324E-07
560	GRID	545100	4164300	5.70E-03	4.99E-04	8.82321E-07	1.26046E-08	1.26046E-07
639	GRID	545100	4164800	5.85E-03	6.20E-05	8.42267E-07	1.20324E-08	1.20324E-07
122	GRID	545000	4164850	6.05E-03	3.10E-05	8.6638E-07	1.23769E-08	1.23769E-07
650	GRID	545000	4164850	6.05E-03	3.10E-05	8.6638E-07	1.23769E-08	1.23769E-07
548	GRID	545050	4164250	6.05E-03	3.02E-04	9.05026E-07	1.29289E-08	1.29289E-07
106	GRID	545150	4164700	6.14E-03	1.32E-04	8.9347E-07	1.27639E-08	1.27639E-07
616	GRID	545150	4164700	6.14E-03	1.32E-04	8.9347E-07	1.27639E-08	1.27639E-07
506	GRID	544950	4164100	6.32E-03	1.18E-04	9.16813E-07	1.30973E-08	1.30973E-07
120	GRID	544900	4164850	6.37E-03	2.17E-05	9.09415E-07	1.29916E-08	1.29916E-07
648	GRID	544900	4164850	6.37E-03	2.17E-05	9.09415E-07	1.29916E-08	1.29916E-07
121	GRID	544950	4164850	6.41E-03	2.51E-05	9.16243E-07	1.30892E-08	1.30892E-07
649	GRID	544950	4164850	6.41E-03	2.51E-05	9.16243E-07	1.30892E-08	1.30892E-07
535	GRID	545000	4164200	6.41E-03	2.04E-04	9.41668E-07	1.34524E-08	1.34524E-07
479	GRID	544900	4164000	6.52E-03	6.76E-05	9.38127E-07	1.34018E-08	1.34018E-07
594	GRID	544600	4164600	6.57E-03	4.95E-05	9.41891E-07	1.34556E-08	1.34556E-07
110	GRID	545100	4164750	6.72E-03	7.77E-05	9.68091E-07	1.38299E-08	1.38299E-07
626	GRID	545100	4164750	6.72E-03	7.77E-05	9.68091E-07	1.38299E-08	1.38299E-07
116	GRID	545050	4164800	6.74E-03	4.74E-05	9.66954E-07	1.38136E-08	1.38136E-07
620	GRID	544750	4164750	6.77E-03	2.92E-05	9.67524E-07	1.38218E-08	1.38218E-07
638	GRID	545050	4164800	6.74E-03	4.74E-05	9.66954E-07	1.38136E-08	1.38136E-07
569	GRID	545100	4164350	6.61E-03	8.19E-04	1.05783E-06	1.51118E-08	1.51118E-07
601	GRID	544650	4164650	6.94E-03	4.19E-05	9.94684E-07	1.42098E-08	1.42098E-07
580	GRID	545150	4164450	6.41E-03	1.95E-03	1.19014E-06	1.7002E-08	1.7002E-07
587	GRID	545150	4164500	6.77E-03	7.88E-04	1.07549E-06	1.53641E-08	1.53641E-07
520	GRID	544950	4164150	7.10E-03	1.47E-04	1.03187E-06	1.4741E-08	1.4741E-07
559	GRID	545050	4164300	7.17E-03	4.07E-04	1.07829E-06	1.54041E-08	1.54041E-07
609	GRID	544700	4164700	7.30E-03	3.55E-05	1.04447E-06	1.4921E-08	1.4921E-07
105	GRID	545100	4164700	7.55E-03	1.01E-04	1.08872E-06	1.55532E-08	1.55532E-07
615	GRID	545100	4164700	7.55E-03	1.01E-04	1.08872E-06	1.55532E-08	1.55532E-07
547	GRID	545000	4164250	7.61E-03	2.57E-04	1.12033E-06	1.60046E-08	1.60046E-07
115	GRID	545000	4164800	7.75E-03	3.68E-05	1.10804E-06	1.58291E-08	1.58291E-07
637	GRID	545000	4164800	7.75E-03	3.68E-05	1.10804E-06	1.58291E-08	1.58291E-07
109	GRID	545050	4164750	8.04E-03	5.83E-05	1.1523E-06	1.64614E-08	1.64614E-07
625	GRID	545050	4164750	8.04E-03	5.83E-05	1.1523E-06	1.64614E-08	1.64614E-07
534	GRID	544950	4164200	8.19E-03	1.82E-04	1.19205E-06	1.70292E-08	1.70292E-07
492	GRID	544900	4164050	8.28E-03	8.63E-05	1.19115E-06	1.70164E-08	1.70164E-07
588	GRID	544600	4164550	8.32E-03	6.21E-05	1.19404E-06	1.70576E-08	1.70576E-07
529	GRID	544600	4164200	8.61E-03	9.70E-05	1.2402E-06	1.77172E-08	1.77172E-07
568	GRID	545050	4164350	8.57E-03	7.27E-04	1.32351E-06	1.89073E-08	1.89073E-07
114	GRID	544950	4164800	8.86E-03	3.02E-05	1.26555E-06	1.80792E-08	1.80792E-07

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
636	GRID	544950	4164800	8.86E-03	3.02E-05	1.26555E-06	1.80792E-08	1.80792E-07
579	GRID	545100	4164450	8.32E-03	1.76E-03	1.43631E-06	2.05187E-08	2.05187E-07
505	GRID	544900	4164100	8.99E-03	1.08E-04	1.29558E-06	1.85083E-08	1.85083E-07
515	GRID	544600	4164150	9.06E-03	8.50E-05	1.30188E-06	1.85982E-08	1.85982E-07
586	GRID	545100	4164500	8.84E-03	7.35E-04	1.3628E-06	1.94685E-08	1.94685E-07
593	GRID	545100	4164550	8.95E-03	3.73E-04	1.32704E-06	1.89577E-08	1.89577E-07
542	GRID	544600	4164250	9.08E-03	1.09E-04	1.30851E-06	1.8693E-08	1.8693E-07
104	GRID	545050	4164700	9.35E-03	7.61E-05	1.3418E-06	1.91686E-08	1.91686E-07
614	GRID	545050	4164700	9.35E-03	7.61E-05	1.3418E-06	1.91686E-08	1.91686E-07
558	GRID	545000	4164300	9.33E-03	3.48E-04	1.37739E-06	1.96771E-08	1.96771E-07
519	GRID	544900	4164150	9.57E-03	1.32E-04	1.38149E-06	1.97356E-08	1.97356E-07
554	GRID	544600	4164300	9.62E-03	1.18E-04	1.38582E-06	1.97974E-08	1.97974E-07
595	GRID	544650	4164600	9.62E-03	5.33E-05	1.37658E-06	1.96654E-08	1.96654E-07
108	GRID	545000	4164750	9.70E-03	4.56E-05	1.38816E-06	1.98309E-08	1.98309E-07
624	GRID	545000	4164750	9.70E-03	4.56E-05	1.38816E-06	1.98309E-08	1.98309E-07
581	GRID	544600	4164500	9.77E-03	7.50E-05	1.40186E-06	2.00266E-08	2.00266E-07
634	GRID	544850	4164800	9.84E-03	2.43E-05	1.40414E-06	2.00591E-08	2.00591E-07
113	GRID	544900	4164800	9.97E-03	2.62E-05	1.42343E-06	2.03347E-08	2.03347E-07
635	GRID	544900	4164800	9.97E-03	2.62E-05	1.42343E-06	2.03347E-08	2.03347E-07
546	GRID	544950	4164250	9.95E-03	2.29E-04	1.44918E-06	2.07025E-08	2.07025E-07
564	GRID	544600	4164350	9.99E-03	1.17E-04	1.43957E-06	2.05653E-08	2.05653E-07
572	GRID	544600	4164400	1.02E-02	1.05E-04	1.4695E-06	2.09929E-08	2.09929E-07
574	GRID	544600	4164450	1.02E-02	8.82E-05	1.46711E-06	2.09588E-08	2.09588E-07
102	GRID	545050	4164650	1.06E-02	1.08E-04	1.52058E-06	2.17226E-08	2.17226E-07
606	GRID	545050	4164650	1.06E-02	1.08E-04	1.52058E-06	2.17226E-08	2.17226E-07
503	GRID	544600	4164100	1.09E-02	7.31E-05	1.56637E-06	2.23768E-08	2.23768E-07
533	GRID	544900	4164200	1.09E-02	1.62E-04	1.5759E-06	2.25128E-08	2.25128E-07
602	GRID	544700	4164650	1.14E-02	4.46E-05	1.62887E-06	2.32695E-08	2.32695E-07
101	GRID	545050	4164600	1.15E-02	1.70E-04	1.66576E-06	2.37966E-08	2.37966E-07
599	GRID	545050	4164600	1.15E-02	1.70E-04	1.66576E-06	2.37966E-08	2.37966E-07
103	GRID	545000	4164700	1.18E-02	5.98E-05	1.69441E-06	2.42058E-08	2.42058E-07
613	GRID	545000	4164700	1.18E-02	5.98E-05	1.69441E-06	2.42058E-08	2.42058E-07
567	GRID	545000	4164350	1.18E-02	6.27E-04	1.76249E-06	2.51784E-08	2.51784E-07
578	GRID	545050	4164450	1.14E-02	1.58E-03	1.8536E-06	2.64799E-08	2.64799E-07
107	GRID	544950	4164750	1.20E-02	3.76E-05	1.70709E-06	2.4387E-08	2.4387E-07
623	GRID	544950	4164750	1.20E-02	3.76E-05	1.70709E-06	2.4387E-08	2.4387E-07
592	GRID	545050	4164550	1.21E-02	3.02E-04	1.76369E-06	2.51956E-08	2.51956E-07
585	GRID	545050	4164500	1.21E-02	6.15E-04	1.81143E-06	2.58776E-08	2.58776E-07
589	GRID	544650	4164550	1.26E-02	6.90E-05	1.8098E-06	2.58542E-08	2.58542E-07
557	GRID	544950	4164300	1.29E-02	3.14E-04	1.87636E-06	2.68052E-08	2.68052E-07
530	GRID	544650	4164200	1.34E-02	1.07E-04	1.92608E-06	2.75155E-08	2.75155E-07
518	GRID	544850	4164150	1.36E-02	1.20E-04	1.95332E-06	2.79045E-08	2.79045E-07
610	GRID	544750	4164700	1.38E-02	3.67E-05	1.96682E-06	2.80974E-08	2.80974E-07
504	GRID	544850	4164100	1.38E-02	9.88E-05	1.98516E-06	2.83595E-08	2.83595E-07
543	GRID	544650	4164250	1.40E-02	1.23E-04	2.00452E-06	2.86361E-08	2.86361E-07
605	GRID	545000	4164650	1.40E-02	8.35E-05	1.99884E-06	2.85548E-08	2.85548E-07
490	GRID	544600	4164050	1.40E-02	6.22E-05	2.00847E-06	2.86925E-08	2.86925E-07
545	GRID	544900	4164250	1.41E-02	2.05E-04	2.03509E-06	2.90727E-08	2.90727E-07
491	GRID	544850	4164050	1.43E-02	8.02E-05	2.04906E-06	2.92723E-08	2.92723E-07
555	GRID	544650	4164300	1.46E-02	1.38E-04	2.10173E-06	3.00247E-08	3.00247E-07
565	GRID	544650	4164350	1.52E-02	1.42E-04	2.17829E-06	3.11184E-08	3.11184E-07
582	GRID	544650	4164500	1.52E-02	8.66E-05	2.18308E-06	3.11868E-08	3.11868E-07
622	GRID	544900	4164750	1.54E-02	3.28E-05	2.19126E-06	3.13037E-08	3.13037E-07
532	GRID	544850	4164200	1.54E-02	1.47E-04	2.20756E-06	3.15366E-08	3.15366E-07
573	GRID	544650	4164400	1.55E-02	1.27E-04	2.22052E-06	3.17217E-08	3.17217E-07
612	GRID	544950	4164700	1.55E-02	4.89E-05	2.21574E-06	3.16535E-08	3.16535E-07
575	GRID	544650	4164450	1.55E-02	1.05E-04	2.22688E-06	3.18126E-08	3.18126E-07
598	GRID	545000	4164600	1.58E-02	1.26E-04	2.27426E-06	3.24895E-08	3.24895E-07
516	GRID	544650	4164150	1.63E-02	9.08E-05	2.33262E-06	3.33232E-08	3.33232E-07
591	GRID	545000	4164550	1.72E-02	2.09E-04	2.48254E-06	3.54649E-08	3.54649E-07
596	GRID	544700	4164600	1.74E-02	5.78E-05	2.48636E-06	3.55194E-08	3.55194E-07
566	GRID	544950	4164350	1.76E-02	5.39E-04	2.5802E-06	3.686E-08	3.686E-07
577	GRID	545000	4164450	1.73E-02	1.25E-03	2.64692E-06	3.78131E-08	3.78131E-07
584	GRID	545000	4164500	1.79E-02	4.27E-04	2.61179E-06	3.73113E-08	3.73113E-07
604	GRID	544950	4164650	1.94E-02	6.68E-05	2.76652E-06	3.95218E-08	3.95218E-07
556	GRID	544900	4164300	2.04E-02	2.81E-04	2.94917E-06	4.2131E-08	4.2131E-07
517	GRID	544800	4164150	2.09E-02	1.11E-04	2.99782E-06	4.28261E-08	4.28261E-07
621	GRID	544850	4164750	2.12E-02	3.07E-05	3.02757E-06	4.3251E-08	4.3251E-07
611	GRID	544900	4164700	2.17E-02	4.28E-05	3.09901E-06	4.42715E-08	4.42715E-07
531	GRID	544800	4164200	2.29E-02	1.36E-04	3.28338E-06	4.69054E-08	4.69054E-07
597	GRID	544950	4164600	2.31E-02	9.52E-05	3.30929E-06	4.72756E-08	4.72756E-07
544	GRID	544850	4164250	2.45E-02	1.86E-04	3.51236E-06	5.01766E-08	5.01766E-07
590	GRID	544950	4164550	2.65E-02	1.43E-04	3.79142E-06	5.41631E-08	5.41631E-07
603	GRID	544900	4164650	2.89E-02	5.70E-05	4.12778E-06	5.89682E-08	5.89682E-07

Table B1. Cancer Risks Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	DPM GLC from Haul truck	Cancer Risk (70 Yr Exposure)	Cancer Risk (1 Yr Exposure)	Cancer Risk (1 Yr Exposure adjusted by ASF)
583	GRID	544950	4164500	2.89E-02	2.47E-04	4.15482E-06	5.93546E-08	5.93546E-07
576	GRID	544950	4164450	3.09E-02	5.59E-04	4.48448E-06	6.40639E-08	6.40639E-07
								6.40639E-07

Sample Calculation:

At the receptor (#576), which has the highest cancer risk:

Cancer = [(3.09E-2 + 5.59E-4)) x 1.1 x 302 x 365 x 3 x 0.00001] / 25550 [70 years exposure] =

Cancer ={ [(3.09E-02 + 5.59E-4) x 1.1 x 302 x 365 x 3 x 0.00001] / 25550} x (1/70) [1 years exposure] =

Cancer ={ [(3.09E-2 + 5.59E-4) x 1.1 x 302 x 365 x 3 x 0.00001] / 25550} x (1/70) x 10 [1 Year exposure for infants] =

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	1-hr (ug/m3) Acrolein GLC from construction	1-hr (ug/m3) Acrolein GLC from Haul truck	Chronic Index Hic	Acute Index Hia	Annual (ug/m3) PM2.5 GLC from construction	Annual (ug/m3) PM2.5 GLC from Haul truck
400	GRID	545550	4162650	6.74E-05	1.46E-06	2.82E-06	3.78E-07	5.44E-06	4.67E-04	8.00E-05	0.00E+00
402	GRID	545450	4162750	6.97E-05	1.62E-06	2.85E-06	2.95E-07	5.64E-06	4.59E-04	8.00E-05	0.00E+00
406	GRID	545400	4162800	7.12E-05	1.88E-06	2.84E-06	2.48E-07	5.77E-06	4.51E-04	8.00E-05	0.00E+00
401	GRID	545550	4162700	7.23E-05	1.53E-06	2.94E-06	3.99E-07	5.83E-06	4.88E-04	9.00E-05	0.00E+00
403	GRID	545500	4162750	7.37E-05	1.58E-06	2.99E-06	3.60E-07	5.95E-06	4.90E-04	9.00E-05	0.00E+00
407	GRID	545450	4162800	7.55E-05	1.70E-06	3.02E-06	3.13E-07	6.09E-06	4.87E-04	9.00E-05	0.00E+00
412	GRID	545400	4162850	7.72E-05	1.98E-06	3.04E-06	2.66E-07	6.26E-06	4.83E-04	9.00E-05	0.00E+00
404	GRID	545550	4162750	7.75E-05	1.61E-06	3.05E-06	4.23E-07	6.26E-06	5.07E-04	9.00E-05	0.00E+00
408	GRID	545500	4162800	7.95E-05	1.66E-06	3.12E-06	3.86E-07	6.41E-06	5.12E-04	9.00E-05	0.00E+00
405	GRID	545600	4162750	8.10E-05	1.69E-06	3.02E-06	4.67E-07	6.53E-06	5.09E-04	1.00E-04	0.00E+00
413	GRID	545450	4162850	8.15E-05	1.80E-06	3.18E-06	3.37E-07	6.59E-06	5.13E-04	1.00E-04	0.00E+00
409	GRID	545550	4162800	8.32E-05	1.70E-06	3.13E-06	4.49E-07	6.71E-06	5.23E-04	1.00E-04	0.00E+00
418	GRID	545400	4162900	8.39E-05	2.09E-06	3.22E-06	2.84E-07	6.80E-06	5.12E-04	1.00E-04	0.00E+00
414	GRID	545500	4162850	8.57E-05	1.75E-06	3.23E-06	4.10E-07	6.91E-06	5.31E-04	1.00E-04	0.00E+00
410	GRID	545600	4162800	8.66E-05	1.80E-06	3.06E-06	4.91E-07	6.98E-06	5.19E-04	1.00E-04	0.00E+00
424	GRID	545350	4162950	8.66E-05	2.59E-06	3.25E-06	3.13E-07	7.05E-06	5.21E-04	1.00E-04	0.00E+00
419	GRID	545450	4162900	8.84E-05	1.90E-06	3.31E-06	3.60E-07	7.13E-06	5.36E-04	1.00E-04	0.00E+00
411	GRID	545650	4162800	8.93E-05	1.90E-06	2.90E-06	4.93E-07	7.21E-06	4.96E-04	1.10E-04	0.00E+00
415	GRID	545550	4162850	8.93E-05	1.81E-06	3.20E-06	4.78E-07	7.20E-06	5.37E-04	1.10E-04	0.00E+00
431	GRID	545300	4163000	8.95E-05	3.29E-06	3.27E-06	4.96E-07	7.34E-06	5.50E-04	1.10E-04	0.00E+00
425	GRID	545400	4162950	9.13E-05	2.21E-06	3.38E-06	3.05E-07	7.39E-06	5.38E-04	1.10E-04	0.00E+00
420	GRID	545500	4162900	9.24E-05	1.86E-06	3.31E-06	4.38E-07	7.44E-06	5.49E-04	1.10E-04	0.00E+00
416	GRID	545600	4162850	9.24E-05	1.91E-06	3.08E-06	5.14E-07	7.46E-06	5.25E-04	1.10E-04	0.00E+00
432	GRID	545350	4163000	9.46E-05	2.77E-06	3.44E-06	3.37E-07	7.70E-06	5.52E-04	1.10E-04	0.00E+00
417	GRID	545650	4162850	9.50E-05	2.03E-06	2.87E-06	5.06E-07	7.67E-06	4.93E-04	1.10E-04	0.00E+00
426	GRID	545450	4162950	9.57E-05	2.01E-06	3.44E-06	3.86E-07	7.72E-06	5.57E-04	1.10E-04	0.00E+00
421	GRID	545550	4162900	9.59E-05	1.93E-06	3.24E-06	5.06E-07	7.73E-06	5.47E-04	1.10E-04	0.00E+00
422	GRID	545600	4162900	9.88E-05	2.05E-06	3.07E-06	5.40E-07	7.98E-06	5.27E-04	1.20E-04	0.00E+00
427	GRID	545500	4162950	9.95E-05	1.98E-06	3.38E-06	4.70E-07	8.03E-06	5.64E-04	1.20E-04	0.00E+00
433	GRID	545400	4163000	9.93E-05	2.35E-06	3.51E-06	3.29E-07	8.04E-06	5.62E-04	1.20E-04	0.00E+00
423	GRID	545650	4162900	1.01E-04	2.18E-06	2.81E-06	5.19E-07	8.18E-06	4.86E-04	1.20E-04	0.00E+00
428	GRID	545550	4162950	1.03E-04	2.06E-06	3.27E-06	5.38E-07	8.31E-06	5.55E-04	1.20E-04	0.00E+00
434	GRID	545450	4163000	1.04E-04	2.13E-06	3.54E-06	4.12E-07	8.36E-06	5.75E-04	1.20E-04	0.00E+00
445	GRID	545350	4163050	1.04E-04	2.96E-06	3.61E-06	3.63E-07	8.42E-06	5.80E-04	1.20E-04	0.00E+00
429	GRID	545600	4162950	1.06E-04	2.20E-06	3.04E-06	5.64E-07	8.54E-06	5.26E-04	1.20E-04	0.00E+00
435	GRID	545500	4163000	1.08E-04	2.11E-06	3.44E-06	5.01E-07	8.67E-06	5.76E-04	1.30E-04	0.00E+00
430	GRID	545650	4162950	1.08E-04	2.34E-06	2.72E-06	5.32E-07	8.72E-06	4.74E-04	1.30E-04	0.00E+00
446	GRID	545400	4163050	1.08E-04	2.51E-06	3.64E-06	3.52E-07	8.76E-06	5.84E-04	1.30E-04	0.00E+00
436	GRID	545550	4163000	1.11E-04	2.21E-06	3.26E-06	5.71E-07	8.94E-06	5.60E-04	1.30E-04	0.00E+00
447	GRID	545450	4163050	1.13E-04	2.28E-06	3.61E-06	4.44E-07	9.08E-06	5.92E-04	1.30E-04	0.00E+00
437	GRID	545600	4163000	1.14E-04	2.37E-06	2.97E-06	5.90E-07	9.16E-06	5.20E-04	1.30E-04	0.00E+00
458	GRID	545350	4163100	1.14E-04	3.19E-06	3.77E-06	3.91E-07	9.23E-06	6.06E-04	1.30E-04	0.00E+00
438	GRID	545650	4163000	1.15E-04	2.52E-06	2.59E-06	5.40E-07	9.32E-06	4.57E-04	1.40E-04	0.00E+00
448	GRID	545500	4163050	1.16E-04	2.27E-06	3.48E-06	5.38E-07	9.38E-06	5.86E-04	1.40E-04	0.00E+00
439	GRID	545700	4163000	1.17E-04	2.68E-06	2.40E-06	4.31E-07	9.42E-06	4.13E-04	1.40E-04	0.00E+00
444	GRID	545950	4163000	1.16E-04	4.14E-06	1.41E-06	4.20E-07	9.49E-06	2.68E-04	1.40E-04	0.00E+00
443	GRID	545900	4163000	1.16E-04	3.79E-06	1.62E-06	3.94E-07	9.50E-06	2.95E-04	1.40E-04	0.00E+00
440	GRID	545750	4163000	1.17E-04	2.86E-06	2.16E-06	2.95E-07	9.48E-06	3.59E-04	1.40E-04	0.00E+00
442	GRID	545850	4163000	1.17E-04	3.43E-06	1.80E-06	3.37E-07	9.50E-06	3.12E-04	1.40E-04	0.00E+00
441	GRID	545800	4163000	1.17E-04	3.11E-06	1.92E-06	2.66E-07	9.50E-06	3.20E-04	1.40E-04	0.00E+00
459	GRID	545400	4163100	1.18E-04	2.70E-06	3.77E-06	3.78E-07	9.56E-06	6.04E-04	1.40E-04	0.00E+00
449	GRID	545550	4163050	1.20E-04	2.39E-06	3.23E-06	6.05E-07	9.64E-06	5.60E-04	1.40E-04	0.00E+00
450	GRID	545600	4163050	1.22E-04	2.57E-06	2.88E-06	6.13E-07	9.84E-06	5.10E-04	1.40E-04	0.00E+00
460	GRID	545450	4163100	1.23E-04	2.45E-06	3.67E-06	4.78E-07	9.88E-06	6.06E-04	1.40E-04	0.00E+00
451	GRID	545650	4163050	1.24E-04	2.74E-06	2.56E-06	5.45E-07	9.98E-06	4.53E-04	1.50E-04	0.00E+00
457	GRID	545950	4163050	1.23E-04	4.56E-06	1.29E-06	4.41E-07	1.01E-05	2.52E-04	1.50E-04	0.00E+00
456	GRID	545900	4163050	1.23E-04	4.22E-06	1.52E-06	4.33E-07	1.01E-05	2.86E-04	1.50E-04	0.00E+00
455	GRID	545850	4163050	1.24E-04	3.82E-06	1.73E-06	3.84E-07	1.01E-05	3.10E-04	1.50E-04	0.00E+00
452	GRID	545700	4163050	1.24E-04	2.92E-06	2.34E-06	4.15E-07	1.01E-05	4.03E-04	1.50E-04	0.00E+00
453	GRID	545750	4163050	1.24E-04	3.14E-06	2.06E-06	2.69E-07	1.01E-05	3.40E-04	1.50E-04	0.00E+00
454	GRID	545800	4163050	1.24E-04	3.45E-06	1.91E-06	3.11E-07	1.01E-05	3.24E-04	1.50E-04	0.00E+00
470	GRID	545350	4163150	1.25E-04	3.44E-06	3.90E-06	4.25E-07	1.01E-05	6.31E-04	1.50E-04	0.00E+00
461	GRID	545500	4163100	1.26E-04	2.44E-06	3.48E-06	5.77E-07	1.02E-05	5.93E-04	1.50E-04	0.00E+00
462	GRID	545550	4163100	1.29E-04	2.60E-06	3.16E-06	6.45E-07	1.04E-05	5.56E-04	1.50E-04	0.00E+00
471	GRID	545400	4163150	1.30E-04	2.90E-06	3.87E-06	4.07E-07	1.05E-05	6.22E-04	1.50E-04	0.00E+00
463	GRID	545600	4163100	1.31E-04	2.80E-06	2.74E-06	6.39E-07	1.06E-05	4.93E-04	1.50E-04	0.00E+00
469	GRID	545900	4163100	1.31E-04	4.68E-06	1.40E-06	4.67E-07	1.07E-05	2.72E-04	1.50E-04	0.00E+00
468	GRID	545850	4163100	1.32E-04	4.26E-06	1.64E-06	4.33E-07	1.08E-05	3.03E-04	1.60E-04	0.00E+00
464	GRID	545650	4163100	1.32E-04	2.99E-06	2.52E-06	5.45E-07	1.07E-05	4.48E-04	1.60E-04	0.00E+00
467	GRID	545800	4163100	1.32E-04	3.84E-06	1.86E-06	3.63E-07	1.08E-05	3.24E-04	1.60E-04	0.00E+00
465	GRID	545700	4163100	1.33E-04	3.20E-06	2.25E-06	3.94E-07	1.08E-05	3.86E-04	1.60E-04	0.00E+00
466	GRID	545750	4163100	1.33E-04	3.47E-06	2.01E-06	2.79E-07	1.08E-05	3.35E-04	1.60E-04	0.00E+00
472	GRID	545450	4163150	1.34E-04	2.64E-06	3.71E-06	5.14E-07	1.08E-05	6.18E-04	1.60E-04	0.00E+00
473	GRID	545500	4163150	1.37E-04	2.65E-06	3.44E-06	6.18E-07	1.11E-05	5.95E-04	1.60E-04	0.00E+00
474	GRID	545550	4163150	1.40E-04	2.84E-06	3.06E-06	6.84E-07	1.13E-05	5.47E-04	1.70E-04	0.00E+00
475	GRID	545600	4163150	1.42E-04	3.06E-06	2.70E-06	6.60E-07	1.14E-05	4.91E-04	1.70E-04	0.00E+00
478	GRID	545750	4163150	1.42E-04	3.87E-06	1.98E-06	3.31E-07	1.15E-05	3.37E-04	1.70E-04	0.00E+00
476	GRID	545650	4163150	1.42E-04	3.29E-06	2.45E-06	5.40E-07	1.15E-05	4.37E-04	1.70E-04	0.00E+00
477	GRID	545700	4163150	1.42E-04	3.54E-06	2.13E-06	3.68E-07	1.15E-05	3.64E-04	1.70E-04	0.00E+00
381	GRID	544650	4165600	2.85E-04	4.46E-06	1.15E-05	4.38E-07	2.29E-05	1.74E-03	3.40E-04	0.00E+00
362	GRID	544650	4165550	3.03E-04	4.53E-06	1.22E-05	4.54E-07	2.43E-05	1.85E-03	3.60E-04	0.00E+00
382	GRID	544700	4165600	3.18E-04	5.04E-06	9.90E-06	5.11E-07	2.56E-05	1.52E-03	3.80E-04	0.00E+00
343	GRID	544650	4165500	3.23E-04	4.63E-06	1.30E-05	5.27E-07	2.59E-05	1.97E-03	3.80E-04	0.00E+00
363	GRID	544700	4165550	3.41E-04	5.11E-06	1.07E-05	5.04E-07	2.73E-05	1.64E-03	4.00E-04	0.00E+00
324	GRID	544650	4165450	3.45E-04	4.78E-06	1.37E-05	5.95E-07	2.77E-05	2.09E-03	4.10E-04	0.00E+00
383	GRID	544750	4165600	3.56E-04	5.70E-06	1.08E-05	5.56E-07	2.85E-05	1.66E-03	4.20E-04	0.00E+00
344	GRID	544700	4165500	3.65E-04	5.19E-06	1.16E-05	4.91E-07	2.93E-05	1.77E-03	4.30E-04	0.00E+00
305	GRID	544650	4165400	3.72E-04	4.97E-06	1.45E-05	6.50E-07	2.97E-05	2.22E-03	4.40E-04	0.00E+00
2	GRID	545650	4163650	3.69E-04	1.42E-05	3.84E-06	1.13E-06	3.04E-05	7.28E-04	4.40E-04	0.00E+00
364	GRID	544750	4165550	3.81E-04	5.81E-06	1.14E-05	5.66E-07	3.06E-05	1.75E-03	4.50E-04	0.00E+00

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	1-hr (ug/m3) Acrolein GLC from construction	1-hr (ug/m3) Acrolein GLC from Haul truck	Chronic Index Hic	Acute Index Hia	Annual (ug/m3) PM2.5 GLC from construction	Annual (ug/m3) PM2.5 GLC from Haul truck
1	GRID	545600	4163650	3.81E-04	1.23E-05	3.97E-06	9.79E-07	3.11E-05	7.21E-04	4.50E-04	0.00E+00
384	GRID	544800	4165600	3.92E-04	6.38E-06	1.31E-05	5.92E-07	3.15E-05	1.99E-03	4.60E-04	0.00E+00
325	GRID	544700	4165450	3.94E-04	5.29E-06	1.26E-05	5.14E-07	3.15E-05	1.92E-03	4.60E-04	0.00E+00
286	GRID	544650	4165350	4.01E-04	5.24E-06	1.53E-05	6.86E-07	3.21E-05	2.34E-03	4.70E-04	0.00E+00
345	GRID	544750	4165500	4.12E-04	5.92E-06	1.21E-05	5.71E-07	3.30E-05	1.84E-03	4.90E-04	0.00E+00
11	GRID	545650	4163700	4.12E-04	1.75E-05	3.87E-06	1.19E-06	3.39E-05	7.40E-04	4.90E-04	0.00E+00
365	GRID	544800	4165550	4.23E-04	6.57E-06	1.38E-05	6.11E-07	3.39E-05	2.11E-03	5.00E-04	0.00E+00
306	GRID	544700	4165400	4.25E-04	5.45E-06	1.37E-05	6.00E-07	3.40E-05	2.09E-03	5.00E-04	0.00E+00
385	GRID	544850	4165600	4.27E-04	6.99E-06	1.36E-05	5.82E-07	3.43E-05	2.07E-03	5.00E-04	0.00E+00
10	GRID	545600	4163700	4.25E-04	1.54E-05	4.07E-06	1.24E-06	3.49E-05	7.77E-04	5.00E-04	0.00E+00
28	GRID	545750	4163750	4.25E-04	2.03E-05	3.71E-06	6.03E-07	3.53E-05	6.29E-04	5.00E-04	0.00E+00
267	GRID	544650	4165300	4.34E-04	5.58E-06	1.61E-05	6.99E-07	3.48E-05	2.45E-03	5.10E-04	0.00E+00
9	GRID	545550	4163700	4.43E-04	1.31E-05	4.30E-06	8.51E-07	3.60E-05	7.51E-04	5.20E-04	0.00E+00
27	GRID	545700	4163750	4.41E-04	2.11E-05	3.74E-06	9.03E-07	3.66E-05	6.76E-04	5.20E-04	0.00E+00
326	GRID	544750	4165450	4.45E-04	6.02E-06	1.28E-05	5.66E-07	3.57E-05	1.95E-03	5.30E-04	0.00E+00
48	GRID	545800	4163800	4.52E-04	2.39E-05	4.10E-06	3.65E-07	3.77E-05	6.50E-04	5.30E-04	0.00E+00
346	GRID	544800	4165500	4.59E-04	6.76E-06	1.47E-05	6.18E-07	3.68E-05	2.23E-03	5.40E-04	0.00E+00
386	GRID	544900	4165600	4.59E-04	7.58E-06	1.23E-05	5.11E-07	3.68E-05	1.87E-03	5.40E-04	0.00E+00
8	GRID	545500	4163700	4.59E-04	1.14E-05	4.49E-06	1.51E-06	3.72E-05	8.77E-04	5.40E-04	0.00E+00
287	GRID	544700	4165350	4.61E-04	5.66E-06	1.49E-05	6.78E-07	3.69E-05	2.27E-03	5.40E-04	0.00E+00
26	GRID	545650	4163750	4.59E-04	2.13E-05	3.80E-06	1.17E-06	3.79E-05	7.28E-04	5.40E-04	0.00E+00
366	GRID	544850	4165550	4.63E-04	7.30E-06	1.44E-05	6.21E-07	3.71E-05	2.19E-03	5.50E-04	0.00E+00
248	GRID	544650	4165250	4.72E-04	6.03E-06	1.69E-05	7.25E-07	3.79E-05	2.57E-03	5.60E-04	0.00E+00
47	GRID	545750	4163800	4.70E-04	2.43E-05	4.00E-06	3.86E-07	3.91E-05	6.40E-04	5.60E-04	0.00E+00
7	GRID	545450	4163700	4.76E-04	1.04E-05	4.66E-06	1.52E-06	3.85E-05	9.01E-04	5.60E-04	0.00E+00
25	GRID	545600	4163750	4.76E-04	1.98E-05	3.97E-06	1.49E-06	3.92E-05	7.97E-04	5.60E-04	0.00E+00
307	GRID	544750	4165400	4.85E-04	6.16E-06	1.35E-05	5.51E-07	3.88E-05	2.06E-03	5.70E-04	0.00E+00
387	GRID	544950	4165600	4.87E-04	8.22E-06	1.10E-05	6.08E-07	3.92E-05	1.69E-03	5.80E-04	0.00E+00
46	GRID	545700	4163800	4.90E-04	2.50E-05	3.93E-06	7.91E-07	4.07E-05	6.89E-04	5.80E-04	0.00E+00
6	GRID	545400	4163700	4.94E-04	1.15E-05	4.69E-06	1.17E-06	4.00E-05	8.57E-04	5.80E-04	0.00E+00
327	GRID	544800	4165450	4.99E-04	6.93E-06	1.56E-05	6.37E-07	4.00E-05	2.37E-03	5.90E-04	0.00E+00
367	GRID	544900	4165550	4.99E-04	7.98E-06	1.29E-05	5.69E-07	4.00E-05	1.97E-03	5.90E-04	0.00E+00
24	GRID	545550	4163750	4.96E-04	1.66E-05	4.20E-06	1.17E-06	4.06E-05	7.84E-04	5.90E-04	0.00E+00
268	GRID	544700	4165300	5.03E-04	5.95E-06	1.61E-05	7.38E-07	4.03E-05	2.46E-03	5.90E-04	0.00E+00
67	GRID	545800	4163850	4.96E-04	2.97E-05	4.59E-06	3.84E-07	4.16E-05	7.28E-04	5.90E-04	0.00E+00
347	GRID	544850	4165500	5.03E-04	7.60E-06	1.51E-05	6.58E-07	4.04E-05	2.31E-03	5.90E-04	0.00E+00
5	GRID	545350	4163700	5.12E-04	1.35E-05	4.62E-06	1.49E-06	4.16E-05	8.90E-04	6.00E-04	0.00E+00
45	GRID	545650	4163800	5.10E-04	2.60E-05	3.90E-06	1.11E-06	4.24E-05	7.32E-04	6.00E-04	0.00E+00
229	GRID	544650	4165200	5.16E-04	6.60E-06	1.76E-05	8.43E-07	4.14E-05	2.70E-03	6.10E-04	0.00E+00
388	GRID	545000	4165600	5.19E-04	9.00E-06	8.36E-06	7.18E-07	4.17E-05	1.33E-03	6.10E-04	0.00E+00
23	GRID	545500	4163750	5.19E-04	1.41E-05	4.49E-06	1.59E-06	4.21E-05	8.88E-04	6.10E-04	0.00E+00
66	GRID	545750	4163850	5.19E-04	3.02E-05	4.49E-06	4.44E-07	4.34E-05	7.21E-04	6.10E-04	0.00E+00
4	GRID	545300	4163700	5.28E-04	1.42E-05	4.36E-06	1.54E-06	4.28E-05	8.65E-04	6.20E-04	0.00E+00
288	GRID	544750	4165350	5.32E-04	6.32E-06	1.44E-05	5.90E-07	4.25E-05	2.19E-03	6.30E-04	0.00E+00
368	GRID	544950	4165550	5.32E-04	8.69E-06	1.13E-05	6.08E-07	4.28E-05	1.74E-03	6.30E-04	0.00E+00
44	GRID	545600	4163800	5.32E-04	2.55E-05	3.93E-06	1.58E-06	4.41E-05	8.03E-04	6.30E-04	0.00E+00
3	GRID	545250	4163700	5.39E-04	1.46E-05	5.31E-06	1.46E-06	4.37E-05	9.89E-04	6.40E-04	0.00E+00
22	GRID	545450	4163750	5.43E-04	1.27E-05	4.85E-06	1.75E-06	4.40E-05	9.61E-04	6.40E-04	0.00E+00
348	GRID	544900	4165500	5.45E-04	8.40E-06	1.36E-05	6.24E-07	4.37E-05	2.08E-03	6.40E-04	0.00E+00
308	GRID	544800	4165400	5.48E-04	7.10E-06	1.67E-05	6.45E-07	4.38E-05	2.53E-03	6.50E-04	0.00E+00
65	GRID	545700	4163850	5.43E-04	3.07E-05	4.39E-06	5.11E-07	4.53E-05	7.14E-04	6.40E-04	0.00E+00
389	GRID	545050	4165600	5.50E-04	9.88E-06	9.21E-06	7.91E-07	4.42E-05	1.46E-03	6.50E-04	0.00E+00
328	GRID	544850	4165450	5.52E-04	7.90E-06	1.60E-05	6.84E-07	4.42E-05	2.44E-03	6.50E-04	0.00E+00
86	GRID	545800	4163900	5.43E-04	3.80E-05	5.18E-06	4.38E-07	4.60E-05	8.19E-04	6.40E-04	0.00E+00
249	GRID	544700	4165250	5.54E-04	6.35E-06	1.74E-05	7.72E-07	4.42E-05	2.65E-03	6.50E-04	0.00E+00
43	GRID	545550	4163800	5.59E-04	2.19E-05	4.03E-06	1.62E-06	4.59E-05	8.24E-04	6.60E-04	0.00E+00
369	GRID	545000	4165550	5.68E-04	9.52E-06	8.82E-06	7.25E-07	4.56E-05	1.39E-03	6.70E-04	0.00E+00
21	GRID	545400	4163750	5.70E-04	1.41E-05	5.18E-06	1.34E-06	4.62E-05	9.52E-04	6.70E-04	0.00E+00
64	GRID	545650	4163850	5.68E-04	3.18E-05	4.26E-06	1.07E-06	4.74E-05	7.80E-04	6.70E-04	0.00E+00
85	GRID	545750	4163900	5.70E-04	3.89E-05	5.12E-06	4.57E-07	4.82E-05	8.13E-04	6.70E-04	0.00E+00
390	GRID	545100	4165600	5.81E-04	1.09E-05	9.18E-06	7.96E-07	4.68E-05	1.46E-03	6.90E-04	0.00E+00
269	GRID	544750	4165300	5.85E-04	6.56E-06	1.54E-05	6.91E-07	4.67E-05	2.35E-03	6.90E-04	0.00E+00
349	GRID	544950	4165500	5.85E-04	9.17E-06	1.16E-05	6.05E-07	4.69E-05	1.78E-03	6.90E-04	0.00E+00
42	GRID	545500	4163800	5.88E-04	1.81E-05	4.23E-06	1.61E-06	4.78E-05	8.53E-04	6.90E-04	0.00E+00
20	GRID	545350	4163750	5.99E-04	1.64E-05	5.44E-06	1.72E-06	4.86E-05	1.05E-03	7.10E-04	0.00E+00
329	GRID	544900	4165450	5.99E-04	8.82E-06	1.43E-05	6.78E-07	4.81E-05	2.19E-03	7.10E-04	0.00E+00
63	GRID	545600	4163850	5.97E-04	3.28E-05	4.16E-06	1.57E-06	4.97E-05	8.39E-04	7.00E-04	0.00E+00
289	GRID	544800	4165350	6.03E-04	7.28E-06	1.78E-05	6.39E-07	4.83E-05	2.70E-03	7.10E-04	0.00E+00
370	GRID	545050	4165550	6.03E-04	1.05E-05	9.84E-06	8.17E-07	4.85E-05	1.56E-03	7.10E-04	0.00E+00
309	GRID	544850	4165400	6.08E-04	8.20E-06	1.70E-05	7.02E-07	4.87E-05	2.59E-03	7.20E-04	0.00E+00
84	GRID	545700	4163900	5.99E-04	3.96E-05	5.02E-06	5.56E-07	5.05E-05	8.14E-04	7.10E-04	0.00E+00
230	GRID	544700	4165200	6.12E-04	6.87E-06	1.88E-05	7.72E-07	4.89E-05	2.85E-03	7.20E-04	0.00E+00
391	GRID	545150	4165600	6.14E-04	1.21E-05	1.13E-05	7.20E-07	4.95E-05	1.76E-03	7.20E-04	0.00E+00
41	GRID	545450	4163800	6.19E-04	1.58E-05	4.56E-06	2.03E-06	5.01E-05	9.60E-04	7.30E-04	0.00E+00
350	GRID	545000	4165500	6.25E-04	1.01E-05	9.74E-06	7.36E-07	5.02E-05	1.53E-03	7.40E-04	0.00E+00
19	GRID	545300	4163750	6.25E-04	1.69E-05	5.61E-06	1.65E-06	5.07E-05	1.06E-03	7.40E-04	0.00E+00
62	GRID	545550	4163850	6.28E-04	3.00E-05	4.13E-06	2.12E-06	5.20E-05	9.11E-04	7.40E-04	0.00E+00
83	GRID	545650	4163900	6.32E-04	4.06E-05	4.89E-06	7.02E-07	5.31E-05	8.17E-04	7.50E-04	0.00E+00
371	GRID	545100	4165550	6.39E-04	1.16E-05	1.05E-05	8.38E-07	5.15E-05	1.65E-03	7.50E-04	0.00E+00
250	GRID	544750	4165250	6.48E-04	6.89E-06	1.65E-05	7.80E-07	5.18E-05	2.53E-03	7.60E-04	0.00E+00
330	GRID	544950	4165450	6.45E-04	9.79E-06	1.19E-05	6.03E-07	5.18E-05	1.82E-03	7.60E-04	0.00E+00
392	GRID	545200	4165600	6.45E-04	1.32E-05	1.24E-05	6.03E-07	5.21E-05	1.90E-03	7.60E-04	0.00E+00
18	GRID	545250	4163750	6.50E-04	1.72E-05	5.54E-06	1.55E-06	5.27E-05	1.04E-03	7.70E-04	0.00E+00
40	GRID	545400	4163800	6.54E-04	1.76E-05	4.98E-06	1.56E-06	5.32E-05	9.54E-04	7.70E-04	0.00E+00
310	GRID	544900	4165400	6.63E-04	9.35E-06	1.51E-05	7.31E-07	5.32E-05	2.31E-03	7.80E-04	0.00E+00
351	GRID	545050	4165500	6.66E-04	1.12E-05	1.05E-05	8.40E-07	5.35E-05	1.65E-03	7.90E-04	0.00E+00
61	GRID	545500	4163850	6.63E-04	2.41E-05	4.13E-06	1.49E-06	5.43E-05	8.22E-04	7.80E-04	0.00E+00
270	GRID	544800	4165300	6.70E-04	7.50E-06	1.91E-05	6.21E-07	5.36E-05	2.89E-03	7.90E-04	0.00E+00
17	GRID	545200	4163750	6.70E-04	1.74E-05	6.07E-06	1.40E-06	5.43E-05	1.09E-03	7.90E-04	0.00E+00
290	GRID	544850	4165350	6.74E-04	8.49E-06	1.81E-05	7.18E-07	5.39E-05	2.75E-03	8.00E-04	0.00E+00

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3)		1-hr (ug/m3)		Chronic	Acute	Annual (ug/m3)	
				DPM GLC	DPM GLC	Acrolein GLC	Acrolein GLC	Index	Index	PM2.5 GLC	PM2.5 GLC
				from construction	from Haul truck	from construction	from Haul truck	Hic	Hia	from construction	from Haul truck
82	GRID	545600	4163900	6.68E-04	4.22E-05	4.95E-06	1.50E-06	5.60E-05	9.41E-04	7.90E-04	0.00E+00
372	GRID	545150	4165550	6.77E-04	1.29E-05	1.25E-05	7.70E-07	5.45E-05	1.94E-03	8.00E-04	0.00E+00
211	GRID	544700	4165150	6.81E-04	7.54E-06	2.01E-05	8.90E-07	5.45E-05	3.07E-03	8.00E-04	0.00E+00
393	GRID	545250	4165600	6.79E-04	1.44E-05	1.20E-05	6.94E-07	5.47E-05	1.85E-03	8.00E-04	0.00E+00
16	GRID	545150	4163750	6.86E-04	1.69E-05	6.56E-06	1.15E-06	5.55E-05	1.13E-03	8.10E-04	0.00E+00
331	GRID	545000	4165450	6.92E-04	1.08E-05	1.07E-05	7.41E-07	5.56E-05	1.67E-03	8.20E-04	0.00E+00
39	GRID	545350	4163800	6.94E-04	2.04E-05	5.51E-06	1.98E-06	5.65E-05	1.09E-03	8.20E-04	0.00E+00
15	GRID	545100	4163750	6.97E-04	1.65E-05	6.62E-06	1.06E-06	5.64E-05	1.12E-03	8.20E-04	0.00E+00
12	GRID	544950	4163750	7.01E-04	1.77E-05	1.18E-05	1.01E-06	5.69E-05	1.87E-03	8.30E-04	0.00E+00
14	GRID	545050	4163750	7.03E-04	1.66E-05	7.48E-06	1.05E-06	5.70E-05	1.24E-03	8.30E-04	0.00E+00
60	GRID	545450	4163850	7.03E-04	2.02E-05	4.26E-06	2.40E-06	5.72E-05	9.72E-04	8.30E-04	0.00E+00
13	GRID	545000	4163750	7.08E-04	1.71E-05	1.01E-05	1.04E-06	5.72E-05	1.62E-03	8.30E-04	0.00E+00
352	GRID	545100	4165500	7.08E-04	1.24E-05	1.20E-05	8.79E-07	5.70E-05	1.88E-03	8.40E-04	0.00E+00
394	GRID	545300	4165600	7.08E-04	1.55E-05	1.05E-05	7.54E-07	5.71E-05	1.64E-03	8.40E-04	0.00E+00
373	GRID	545200	4165550	7.14E-04	1.41E-05	1.31E-05	6.29E-07	5.75E-05	2.00E-03	8.40E-04	0.00E+00
81	GRID	545550	4163900	7.06E-04	4.22E-05	5.15E-06	2.26E-06	5.91E-05	1.08E-03	8.30E-04	0.00E+00
311	GRID	544950	4165400	7.19E-04	1.04E-05	1.22E-05	6.65E-07	5.76E-05	1.87E-03	8.50E-04	0.00E+00
231	GRID	544750	4165200	7.23E-04	7.34E-06	1.78E-05	8.43E-07	5.78E-05	2.72E-03	8.50E-04	0.00E+00
395	GRID	545350	4165600	7.32E-04	1.67E-05	8.30E-06	7.54E-07	5.92E-05	1.32E-03	8.60E-04	0.00E+00
38	GRID	545300	4163800	7.37E-04	2.05E-05	6.07E-06	1.76E-06	5.98E-05	1.14E-03	8.70E-04	0.00E+00
291	GRID	544900	4165350	7.41E-04	9.79E-06	1.59E-05	7.72E-07	5.93E-05	2.43E-03	8.70E-04	0.00E+00
332	GRID	545050	4165450	7.41E-04	1.19E-05	1.10E-05	8.64E-07	5.95E-05	1.74E-03	8.70E-04	0.00E+00
251	GRID	544800	4165250	7.50E-04	7.77E-06	2.06E-05	6.86E-07	5.99E-05	3.11E-03	8.90E-04	0.00E+00
374	GRID	545250	4165550	7.48E-04	1.54E-05	1.21E-05	7.23E-07	6.04E-05	1.87E-03	8.80E-04	0.00E+00
353	GRID	545150	4165500	7.50E-04	1.38E-05	1.37E-05	8.22E-07	6.04E-05	2.11E-03	8.90E-04	0.00E+00
59	GRID	545400	4163850	7.50E-04	2.28E-05	4.49E-06	1.82E-06	6.11E-05	9.23E-04	8.90E-04	0.00E+00
271	GRID	544850	4165300	7.55E-04	8.78E-06	1.93E-05	7.33E-07	6.03E-05	2.92E-03	8.90E-04	0.00E+00
396	GRID	545400	4165600	7.52E-04	1.77E-05	6.00E-06	6.94E-07	6.09E-05	9.79E-04	8.90E-04	0.00E+00
80	GRID	545500	4163900	7.50E-04	3.43E-05	5.38E-06	2.21E-06	6.20E-05	1.11E-03	8.90E-04	0.00E+00
193	GRID	544700	4165100	7.66E-04	8.39E-06	2.15E-05	1.00E-06	6.11E-05	3.29E-03	9.00E-04	0.00E+00
397	GRID	545450	4165600	7.66E-04	1.88E-05	5.90E-06	6.16E-07	6.20E-05	9.54E-04	9.00E-04	0.00E+00
312	GRID	545000	4165400	7.75E-04	1.15E-05	1.16E-05	7.44E-07	6.21E-05	1.81E-03	9.10E-04	0.00E+00
398	GRID	545500	4165600	7.70E-04	1.98E-05	6.66E-06	5.27E-07	6.25E-05	1.05E-03	9.10E-04	0.00E+00
399	GRID	545550	4165600	7.70E-04	2.08E-05	7.02E-06	4.96E-07	6.25E-05	1.10E-03	9.10E-04	0.00E+00
375	GRID	545300	4165550	7.79E-04	1.68E-05	1.01E-05	7.85E-07	6.29E-05	1.59E-03	9.20E-04	0.00E+00
37	GRID	545250	4163800	7.79E-04	2.09E-05	6.56E-06	1.67E-06	6.33E-05	1.20E-03	9.20E-04	0.00E+00
333	GRID	545100	4165450	7.90E-04	1.33E-05	1.35E-05	9.24E-07	6.35E-05	2.11E-03	9.30E-04	0.00E+00
354	GRID	545200	4165500	7.92E-04	1.52E-05	1.36E-05	6.76E-07	6.38E-05	2.08E-03	9.30E-04	0.00E+00
79	GRID	545450	4163900	8.01E-04	2.73E-05	5.57E-06	2.95E-06	6.54E-05	1.24E-03	9.40E-04	0.00E+00
100	GRID	545550	4163950	7.90E-04	5.96E-05	5.87E-06	2.15E-06	6.72E-05	1.17E-03	9.30E-04	1.00E-05
292	GRID	544950	4165350	8.06E-04	1.10E-05	1.24E-05	7.41E-07	6.46E-05	1.92E-03	9.50E-04	0.00E+00
376	GRID	545350	4165550	8.04E-04	1.80E-05	7.64E-06	7.85E-07	6.49E-05	1.23E-03	9.50E-04	0.00E+00
58	GRID	545350	4163850	8.04E-04	2.58E-05	4.92E-06	2.23E-06	6.55E-05	1.05E-03	9.50E-04	0.00E+00
212	GRID	544750	4165150	8.17E-04	7.95E-06	1.92E-05	8.69E-07	6.52E-05	2.93E-03	9.60E-04	0.00E+00
36	GRID	545200	4163800	8.21E-04	2.07E-05	6.85E-06	1.49E-06	6.65E-05	1.22E-03	9.70E-04	0.00E+00
377	GRID	545400	4165550	8.21E-04	1.92E-05	5.84E-06	7.15E-07	6.64E-05	9.57E-04	9.70E-04	0.00E+00
380	GRID	545550	4165550	8.24E-04	2.28E-05	7.35E-06	5.40E-07	6.69E-05	1.15E-03	9.70E-04	0.00E+00
313	GRID	545050	4165400	8.30E-04	1.28E-05	1.26E-05	8.85E-07	6.66E-05	1.96E-03	9.80E-04	0.00E+00
355	GRID	545250	4165500	8.28E-04	1.67E-05	1.20E-05	7.54E-07	6.68E-05	1.86E-03	9.80E-04	0.00E+00
378	GRID	545450	4165550	8.30E-04	2.04E-05	6.79E-06	6.34E-07	6.72E-05	1.08E-03	9.80E-04	0.00E+00
379	GRID	545500	4165550	8.30E-04	2.16E-05	7.28E-06	5.35E-07	6.73E-05	1.14E-03	9.80E-04	0.00E+00
272	GRID	544900	4165300	8.35E-04	1.02E-05	1.67E-05	8.04E-07	6.68E-05	2.56E-03	9.80E-04	0.00E+00
334	GRID	545150	4165450	8.39E-04	1.48E-05	1.46E-05	8.77E-07	6.74E-05	2.27E-03	9.90E-04	0.00E+00
232	GRID	544800	4165200	8.48E-04	8.14E-06	2.23E-05	8.09E-07	6.77E-05	3.38E-03	1.00E-03	0.00E+00
252	GRID	544850	4165250	8.53E-04	9.08E-06	2.06E-05	7.31E-07	6.80E-05	3.11E-03	1.01E-03	0.00E+00
99	GRID	545500	4163950	8.46E-04	5.37E-05	6.23E-06	3.44E-06	7.11E-05	1.41E-03	1.00E-03	1.00E-05
356	GRID	545300	4165500	8.59E-04	1.82E-05	9.54E-06	8.19E-07	6.94E-05	1.51E-03	1.01E-03	0.00E+00
35	GRID	545150	4163800	8.59E-04	2.02E-05	6.82E-06	1.20E-06	6.96E-05	1.17E-03	1.02E-03	0.00E+00
78	GRID	545400	4163900	8.59E-04	3.08E-05	5.80E-06	2.30E-06	7.03E-05	1.18E-03	1.01E-03	0.00E+00
175	GRID	544700	4165050	8.66E-04	9.44E-06	2.29E-05	1.05E-06	6.92E-05	3.49E-03	1.02E-03	0.00E+00
57	GRID	545300	4163850	8.64E-04	2.57E-05	5.54E-06	1.89E-06	7.02E-05	1.09E-03	1.02E-03	0.00E+00
293	GRID	545000	4165350	8.73E-04	1.23E-05	1.26E-05	7.44E-07	6.99E-05	1.95E-03	1.03E-03	0.00E+00
361	GRID	545550	4165500	8.79E-04	2.49E-05	7.80E-06	5.87E-07	7.15E-05	1.23E-03	1.04E-03	0.00E+00
335	GRID	545200	4165450	8.84E-04	1.64E-05	1.38E-05	7.31E-07	7.11E-05	2.13E-03	1.04E-03	0.00E+00
357	GRID	545350	4165500	8.81E-04	1.96E-05	6.89E-06	8.17E-07	7.13E-05	1.12E-03	1.04E-03	0.00E+00
314	GRID	545100	4165400	8.88E-04	1.43E-05	1.51E-05	9.68E-07	7.13E-05	2.34E-03	1.05E-03	0.00E+00
360	GRID	545500	4165500	8.93E-04	2.35E-05	7.74E-06	5.43E-07	7.24E-05	1.21E-03	1.05E-03	0.00E+00
358	GRID	545400	4165500	8.95E-04	2.09E-05	6.82E-06	7.41E-07	7.24E-05	1.11E-03	1.06E-03	0.00E+00
34	GRID	545100	4163800	8.97E-04	2.01E-05	7.12E-06	1.13E-06	7.26E-05	1.20E-03	1.06E-03	0.00E+00
655	GRID	544600	4164900	8.99E-04	1.62E-05	1.63E-05	1.00E-06	7.24E-05	2.53E-03	1.06E-03	0.00E+00
359	GRID	545450	4165500	8.99E-04	2.23E-05	7.54E-06	6.52E-07	7.28E-05	1.19E-03	1.06E-03	0.00E+00
273	GRID	544950	4165300	9.13E-04	1.18E-05	1.26E-05	8.14E-07	7.31E-05	1.96E-03	1.08E-03	0.00E+00
98	GRID	545450	4163950	9.08E-04	3.93E-05	6.62E-06	3.71E-06	7.49E-05	1.51E-03	1.07E-03	0.00E+00
336	GRID	545250	4165450	9.22E-04	1.81E-05	1.16E-05	7.88E-07	7.43E-05	1.82E-03	1.09E-03	0.00E+00
194	GRID	544750	4165100	9.30E-04	8.75E-06	2.10E-05	9.32E-07	7.43E-05	3.21E-03	1.10E-03	0.00E+00
56	GRID	545250	4163850	9.28E-04	2.59E-05	6.36E-06	1.81E-06	7.55E-05	1.19E-03	1.10E-03	0.00E+00
77	GRID	545350	4163900	9.26E-04	3.35E-05	6.00E-06	2.46E-06	7.59E-05	1.24E-03	1.09E-03	0.00E+00
33	GRID	545050	4163800	9.33E-04	2.06E-05	7.21E-06	1.12E-06	7.54E-05	1.22E-03	1.10E-03	0.00E+00
294	GRID	545050	4165350	9.39E-04	1.38E-05	1.46E-05	9.05E-07	7.53E-05	2.26E-03	1.11E-03	0.00E+00
342	GRID	545550	4165450	9.37E-04	2.73E-05	8.33E-06	6.37E-07	7.62E-05	1.31E-03	1.11E-03	0.00E+00
315	GRID	545150	4165400	9.42E-04	1.61E-05	1.54E-05	9.39E-07	7.57E-05	2.39E-03	1.11E-03	0.00E+00
253	GRID	544900	4165250	9.50E-04	1.08E-05	1.76E-05	8.22E-07	7.59E-05	2.69E-03	1.12E-03	0.00E+00
337	GRID	545300	4165450	9.50E-04	1.98E-05	8.82E-06	8.58E-07	7.67E-05	1.41E-03	1.12E-03	0.00E+00
341	GRID	545500	4165450	9.59E-04	2.59E-05	8.13E-06	5.58E-07	7.78E-05	1.27E-03	1.13E-03	0.00E+00
213	GRID	544800	4165150	9.68E-04	8.67E-06	2.43E-05	9.13E-07	7.73E-05	3.68E-03	1.14E-03	0.00E+00
32	GRID	545000	4163800	9.66E-04	2.16E-05	1.03E-05	1.10E-06	7.80E-05	1.66E-03	1.14E-03	0.00E+00
233	GRID	544850	4165200	9.73E-04	9.44E-06	2.21E-05	7.10E-07	7.76E-05	3.33E-03	1.15E-03	0.00E+00
338	GRID	545350	4165450	9.70E-04	2.13E-05	6.82E-06	8.53E-07	7.83E-05	1.12E-03	1.14E-03	0.00E+00
340	GRID	545450	4165450	9.73E-04	2.44E-05	8.13E-06	6.71E-07	7.88E-05	1.28E-03	1.15E-03	0.00E+00
339	GRID	545400	4165450	9.77E-04	2.29E-05	7.74E-06	7.67E-07	7.90E-05	1.24E-03	1.15E-03	0.00E+00

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	1-hr (ug/m3) Acrolein GLC from construction	1-hr (ug/m3) Acrolein GLC from Haul truck	Chronic Index Hic	Acute Index Hia	Annual (ug/m3) PM2.5 GLC from construction	Annual (ug/m3) PM2.5 GLC from Haul truck
157	GRID	544700	4165000	9.88E-04	1.09E-05	2.43E-05	1.02E-06	7.90E-05	3.70E-03	1.17E-03	0.00E+00
97	GRID	545400	4163950	9.79E-04	4.41E-05	7.12E-06	3.31E-06	8.10E-05	1.52E-03	1.16E-03	0.00E+00
274	GRID	545000	4165300	9.93E-04	1.32E-05	1.35E-05	7.41E-07	7.95E-05	2.08E-03	1.17E-03	0.00E+00
316	GRID	545200	4165400	9.91E-04	1.78E-05	1.38E-05	7.91E-07	7.97E-05	2.14E-03	1.17E-03	0.00E+00
31	GRID	544950	4163800	9.97E-04	2.27E-05	1.23E-05	1.06E-06	8.07E-05	1.95E-03	1.18E-03	0.00E+00
29	GRID	544850	4163800	9.99E-04	2.35E-05	1.83E-05	9.19E-07	8.08E-05	2.80E-03	1.18E-03	0.00E+00
55	GRID	545200	4163850	9.99E-04	2.56E-05	7.31E-06	1.58E-06	8.11E-05	1.30E-03	1.18E-03	0.00E+00
323	GRID	545550	4165400	9.97E-04	3.02E-05	8.59E-06	6.86E-07	8.12E-05	1.35E-03	1.18E-03	0.00E+00
295	GRID	545100	4165350	1.01E-03	1.54E-05	1.65E-05	1.02E-06	8.07E-05	2.55E-03	1.19E-03	0.00E+00
76	GRID	545300	4163900	1.01E-03	3.33E-05	6.20E-06	2.07E-06	8.21E-05	1.21E-03	1.19E-03	0.00E+00
30	GRID	544900	4163800	1.01E-03	2.34E-05	1.39E-05	9.89E-07	8.19E-05	2.18E-03	1.19E-03	0.00E+00
317	GRID	545250	4165400	1.03E-03	1.97E-05	1.11E-05	8.25E-07	8.29E-05	1.74E-03	1.21E-03	0.00E+00
322	GRID	545500	4165400	1.03E-03	2.87E-05	8.75E-06	6.11E-07	8.35E-05	1.37E-03	1.21E-03	0.00E+00
254	GRID	544950	4165250	1.05E-03	1.25E-05	1.40E-05	8.79E-07	8.37E-05	2.18E-03	1.23E-03	0.00E+00
321	GRID	545450	4165400	1.05E-03	2.70E-05	8.49E-06	6.89E-07	8.53E-05	1.34E-03	1.24E-03	0.00E+00
318	GRID	545300	4165400	1.06E-03	2.16E-05	7.97E-06	9.00E-07	8.51E-05	1.30E-03	1.24E-03	0.00E+00
296	GRID	545150	4165350	1.07E-03	1.74E-05	1.59E-05	1.00E-06	8.56E-05	2.47E-03	1.26E-03	0.00E+00
304	GRID	545550	4165350	1.06E-03	3.36E-05	8.62E-06	7.38E-07	8.65E-05	1.37E-03	1.25E-03	0.00E+00
319	GRID	545350	4165400	1.07E-03	2.35E-05	7.90E-06	8.90E-07	8.62E-05	1.28E-03	1.26E-03	0.00E+00
320	GRID	545400	4165400	1.07E-03	2.52E-05	8.49E-06	7.93E-07	8.62E-05	1.35E-03	1.26E-03	0.00E+00
656	GRID	544650	4164900	1.07E-03	1.59E-05	2.31E-05	9.86E-07	8.58E-05	3.52E-03	1.26E-03	0.00E+00
275	GRID	545050	4165300	1.07E-03	1.49E-05	1.67E-05	9.19E-07	8.59E-05	2.57E-03	1.27E-03	0.00E+00
176	GRID	544750	4165050	1.08E-03	9.79E-06	2.36E-05	1.09E-06	8.58E-05	3.60E-03	1.27E-03	0.00E+00
96	GRID	545350	4163950	1.07E-03	4.59E-05	7.64E-06	2.64E-06	8.78E-05	1.50E-03	1.26E-03	0.00E+00
54	GRID	545150	4163850	1.08E-03	2.54E-05	8.20E-06	1.25E-06	8.70E-05	1.38E-03	1.27E-03	0.00E+00
234	GRID	544900	4165200	1.09E-03	1.13E-05	1.85E-05	8.51E-07	8.73E-05	2.82E-03	1.29E-03	0.00E+00
75	GRID	545250	4163900	1.10E-03	3.34E-05	6.39E-06	1.98E-06	8.94E-05	1.22E-03	1.30E-03	0.00E+00
303	GRID	545500	4165350	1.10E-03	3.18E-05	9.12E-06	6.65E-07	8.95E-05	1.43E-03	1.30E-03	0.00E+00
297	GRID	545200	4165350	1.12E-03	1.94E-05	1.36E-05	8.58E-07	8.98E-05	2.11E-03	1.32E-03	0.00E+00
195	GRID	544800	4165100	1.12E-03	9.35E-06	2.66E-05	9.73E-07	8.95E-05	4.02E-03	1.33E-03	0.00E+00
214	GRID	544850	4165150	1.13E-03	9.97E-06	2.37E-05	8.14E-07	8.98E-05	3.59E-03	1.33E-03	0.00E+00
489	GRID	545400	4164000	1.11E-03	6.95E-06	6.95E-06	4.83E-06	9.35E-05	1.72E-03	1.31E-03	1.00E-05
285	GRID	545550	4165300	1.13E-03	3.75E-05	9.08E-06	7.91E-07	9.20E-05	1.44E-03	1.33E-03	0.00E+00
139	GRID	544700	4164950	1.14E-03	1.29E-05	2.59E-05	9.76E-07	9.13E-05	3.93E-03	1.35E-03	0.00E+00
302	GRID	545450	4165350	1.14E-03	2.99E-05	9.18E-06	7.07E-07	9.21E-05	1.44E-03	1.34E-03	0.00E+00
255	GRID	545000	4165250	1.14E-03	1.44E-05	1.56E-05	8.01E-07	9.14E-05	2.40E-03	1.35E-03	0.00E+00
276	GRID	545100	4165300	1.15E-03	1.68E-05	1.76E-05	1.06E-06	9.21E-05	2.73E-03	1.36E-03	0.00E+00
298	GRID	545250	4165350	1.15E-03	2.16E-05	1.03E-05	8.66E-07	9.28E-05	1.63E-03	1.36E-03	0.00E+00
642	GRID	544600	4164850	1.16E-03	1.92E-05	1.63E-05	1.26E-06	9.29E-05	2.57E-03	1.36E-03	0.00E+00
53	GRID	545100	4163850	1.16E-03	2.60E-05	8.69E-06	1.23E-06	9.35E-05	1.45E-03	1.37E-03	0.00E+00
301	GRID	545400	4165350	1.16E-03	2.80E-05	9.02E-06	8.22E-07	9.39E-05	1.44E-03	1.37E-03	0.00E+00
299	GRID	545300	4165350	1.17E-03	2.37E-05	8.03E-06	9.45E-07	9.44E-05	1.31E-03	1.38E-03	0.00E+00
95	GRID	545300	4163950	1.17E-03	4.56E-05	8.26E-06	2.31E-06	9.58E-05	1.54E-03	1.38E-03	0.00E+00
300	GRID	545350	4165350	1.17E-03	2.58E-05	8.82E-06	9.32E-07	9.48E-05	1.43E-03	1.38E-03	0.00E+00
284	GRID	545500	4165300	1.18E-03	3.55E-05	9.25E-06	7.25E-07	9.59E-05	1.46E-03	1.39E-03	0.00E+00
266	GRID	545550	4165250	1.20E-03	4.21E-05	9.97E-06	8.45E-07	9.80E-05	1.58E-03	1.41E-03	0.00E+00
74	GRID	545200	4163900	1.20E-03	3.37E-05	6.53E-06	1.69E-06	9.78E-05	1.20E-03	1.42E-03	0.00E+00
235	GRID	544950	4165200	1.21E-03	1.34E-05	1.56E-05	9.34E-07	9.70E-05	2.41E-03	1.43E-03	0.00E+00
277	GRID	545150	4165300	1.22E-03	1.90E-05	1.61E-05	1.07E-06	9.75E-05	2.51E-03	1.43E-03	0.00E+00
283	GRID	545450	4165300	1.22E-03	3.34E-05	9.71E-06	7.28E-07	9.94E-05	1.52E-03	1.44E-03	0.00E+00
488	GRID	545350	4164000	1.22E-03	6.90E-05	7.51E-06	2.87E-06	1.02E-04	1.52E-03	1.44E-03	1.00E-05
256	GRID	545050	4165250	1.24E-03	1.62E-05	1.86E-05	9.29E-07	9.91E-05	2.85E-03	1.46E-03	0.00E+00
52	GRID	545050	4163850	1.24E-03	2.73E-05	8.59E-06	1.21E-06	1.00E-04	1.43E-03	1.47E-03	0.00E+00
158	GRID	544750	4165000	1.26E-03	1.11E-05	2.63E-05	1.17E-06	1.01E-04	4.01E-03	1.49E-03	0.00E+00
265	GRID	545500	4165250	1.26E-03	3.99E-05	9.64E-06	7.88E-07	1.03E-04	1.52E-03	1.49E-03	0.00E+00
278	GRID	545200	4165300	1.26E-03	2.13E-05	1.30E-05	9.32E-07	1.02E-04	2.04E-03	1.49E-03	0.00E+00
282	GRID	545400	4165300	1.26E-03	3.11E-05	9.64E-06	8.53E-07	1.02E-04	1.53E-03	1.49E-03	0.00E+00
215	GRID	544900	4165150	1.28E-03	1.18E-05	1.94E-05	8.51E-07	1.02E-04	2.95E-03	1.51E-03	0.00E+00
247	GRID	545550	4165200	1.27E-03	4.74E-05	1.06E-05	8.98E-07	1.04E-04	1.67E-03	1.50E-03	1.00E-05
279	GRID	545250	4165300	1.29E-03	2.38E-05	9.35E-06	9.11E-07	1.04E-04	1.50E-03	1.53E-03	0.00E+00
281	GRID	545350	4165300	1.29E-03	2.87E-05	9.54E-06	9.76E-07	1.04E-04	1.54E-03	1.52E-03	0.00E+00
502	GRID	545400	4164050	1.26E-03	1.33E-04	7.08E-06	6.55E-06	1.10E-04	1.99E-03	1.48E-03	1.00E-05
94	GRID	545250	4163950	1.29E-03	4.71E-05	8.95E-06	2.18E-06	1.06E-04	1.62E-03	1.52E-03	0.00E+00
280	GRID	545300	4165300	1.30E-03	2.63E-05	9.15E-06	9.97E-07	1.05E-04	1.48E-03	1.53E-03	0.00E+00
177	GRID	544800	4165050	1.32E-03	1.04E-05	2.92E-05	9.79E-07	1.05E-04	4.41E-03	1.56E-03	0.00E+00
196	GRID	544850	4165100	1.32E-03	1.06E-05	2.56E-05	9.65E-07	1.06E-04	3.89E-03	1.56E-03	0.00E+00
257	GRID	545100	4165250	1.32E-03	1.83E-05	1.84E-05	1.10E-06	1.06E-04	2.85E-03	1.56E-03	0.00E+00
264	GRID	545450	4165250	1.32E-03	3.76E-05	9.94E-06	7.49E-07	1.07E-04	1.56E-03	1.56E-03	0.00E+00
73	GRID	545150	4163900	1.33E-03	3.47E-05	7.44E-06	1.35E-06	1.08E-04	1.29E-03	1.57E-03	0.00E+00
236	GRID	545000	4165200	1.33E-03	1.55E-05	1.84E-05	9.05E-07	1.07E-04	2.82E-03	1.57E-03	0.00E+00
51	GRID	545000	4163850	1.34E-03	2.87E-05	1.04E-05	1.17E-06	1.08E-04	1.68E-03	1.58E-03	0.00E+00
246	GRID	545500	4165200	1.34E-03	4.52E-05	1.06E-05	8.56E-07	1.10E-04	1.67E-03	1.59E-03	0.00E+00
127	GRID	544700	4164900	1.36E-03	1.55E-05	2.78E-05	1.10E-06	1.08E-04	4.22E-03	1.60E-03	0.00E+00
657	GRID	544700	4164900	1.36E-03	1.55E-05	2.78E-05	1.10E-06	1.08E-04	4.22E-03	1.60E-03	0.00E+00
487	GRID	545300	4164000	1.34E-03	7.23E-05	8.20E-06	2.64E-06	1.12E-04	1.58E-03	1.59E-03	1.00E-05
228	GRID	545550	4165150	1.35E-03	5.37E-05	1.09E-05	9.45E-07	1.11E-04	1.72E-03	1.60E-03	1.00E-05
643	GRID	544650	4164850	1.37E-03	1.93E-05	2.44E-05	1.13E-06	1.10E-04	3.73E-03	1.62E-03	0.00E+00
263	GRID	545400	4165250	1.37E-03	3.49E-05	1.03E-05	8.87E-07	1.11E-04	1.63E-03	1.62E-03	0.00E+00
258	GRID	545150	4165250	1.39E-03	2.08E-05	1.60E-05	1.15E-06	1.12E-04	2.50E-03	1.64E-03	0.00E+00
262	GRID	545350	4165250	1.42E-03	3.22E-05	1.01E-05	1.02E-06	1.14E-04	1.63E-03	1.67E-03	0.00E+00
245	GRID	545450	4165200	1.42E-03	4.25E-05	1.02E-05	7.70E-07	1.15E-04	1.61E-03	1.67E-03	0.00E+00
501	GRID	545350	4164050	1.38E-03	1.44E-04	7.02E-06	3.60E-06	1.21E-04	1.55E-03	1.63E-03	2.00E-05
216	GRID	544950	4165150	1.43E-03	1.43E-05	1.71E-05	9.68E-07	1.14E-04	2.63E-03	1.69E-03	0.00E+00
259	GRID	545200	4165250	1.44E-03	2.35E-05	1.22E-05	1.02E-06	1.15E-04	1.93E-03	1.69E-03	0.00E+00
93	GRID	545200	4163950	1.43E-03	5.01E-05	9.74E-06	1.82E-06	1.17E-04	1.69E-03	1.69E-03	1.00E-05
50	GRID	544950	4163850	1.44E-03	2.97E-05	1.29E-05	1.09E-06	1.16E-04	2.04E-03	1.70E-03	0.00E+00
237	GRID	545050	4165200	1.45E-03	1.77E-05	2.03E-05	9.37E-07	1.16E-04	3.10E-03	1.71E-03	0.00E+00
261	GRID	545300	4165250	1.44E-03	2.94E-05	1.01E-05	1.05E-06	1.16E-04	1.62E-03	1.70E-03	0.00E+00
210	GRID	545550	4165100	1.43E-03	6.12E-05	1.08E-05	9.89E-07	1.18E-04	1.72E-03	1.69E-03	1.00E-05
227	GRID	545500	4165150	1.44E-03	5.13E-05	1.12E-05	9.26E-07	1.18E-04	1.77E-03	1.70E-03	1.00E-05

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3)		1-hr (ug/m3)		Chronic	Acute	Annual (ug/m3)	
				DPM GLC	DPM GLC	Acrolein GLC	Acrolein GLC	Index	Index	PM2.5 GLC	PM2.5 GLC
				from construction	from Haul truck	from construction	from Haul truck	Hic	Hia	from construction	from Haul truck
260	GRID	545250	4165250	1.45E-03	2.65E-05	9.44E-06	9.63E-07	1.17E-04	1.52E-03	1.71E-03	0.00E+00
72	GRID	545100	4163900	1.47E-03	3.62E-05	9.08E-06	1.35E-06	1.19E-04	1.52E-03	1.74E-03	0.00E+00
244	GRID	545400	4165200	1.49E-03	3.95E-05	1.07E-05	9.21E-07	1.21E-04	1.69E-03	1.76E-03	0.00E+00
140	GRID	544750	4164950	1.51E-03	1.30E-05	2.91E-05	1.15E-06	1.20E-04	4.42E-03	1.78E-03	0.00E+00
486	GRID	545250	4164000	1.50E-03	8.03E-05	8.98E-06	2.41E-06	1.25E-04	1.67E-03	1.77E-03	1.00E-05
197	GRID	544900	4165100	1.52E-03	1.25E-05	2.03E-05	8.27E-07	1.21E-04	3.08E-03	1.80E-03	0.00E+00
192	GRID	545550	4165050	1.52E-03	7.00E-05	1.03E-05	1.03E-06	1.25E-04	1.66E-03	1.79E-03	1.00E-05
226	GRID	545450	4165150	1.52E-03	4.84E-05	1.12E-05	8.43E-07	1.24E-04	1.76E-03	1.80E-03	1.00E-05
238	GRID	545100	4165200	1.54E-03	2.01E-05	1.89E-05	1.15E-06	1.23E-04	2.93E-03	1.82E-03	0.00E+00
209	GRID	545500	4165100	1.53E-03	5.87E-05	1.15E-05	9.97E-07	1.26E-04	1.83E-03	1.81E-03	1.00E-05
243	GRID	545350	4165200	1.55E-03	3.63E-05	1.09E-05	1.08E-06	1.25E-04	1.75E-03	1.83E-03	0.00E+00
49	GRID	544900	4163850	1.57E-03	3.02E-05	1.43E-05	1.01E-06	1.27E-04	2.24E-03	1.86E-03	0.00E+00
217	GRID	545000	4165150	1.58E-03	1.69E-05	2.12E-05	1.01E-06	1.26E-04	3.24E-03	1.86E-03	0.00E+00
500	GRID	545300	4164050	1.54E-03	1.62E-04	6.92E-06	3.08E-06	1.34E-04	1.46E-03	1.81E-03	2.00E-05
178	GRID	544850	4165050	1.59E-03	1.15E-05	2.78E-05	1.09E-06	1.27E-04	4.22E-03	1.88E-03	0.00E+00
159	GRID	544800	4165000	1.60E-03	1.17E-05	3.25E-05	1.18E-06	1.27E-04	4.91E-03	1.88E-03	0.00E+00
629	GRID	544600	4164800	1.59E-03	2.27E-05	1.63E-05	1.58E-06	1.28E-04	2.61E-03	1.88E-03	0.00E+00
239	GRID	545150	4165200	1.60E-03	2.30E-05	1.55E-05	1.23E-06	1.29E-04	2.45E-03	1.89E-03	0.00E+00
242	GRID	545300	4165200	1.60E-03	3.30E-05	1.07E-05	1.11E-06	1.29E-04	1.73E-03	1.89E-03	0.00E+00
174	GRID	545550	4165000	1.60E-03	8.06E-05	9.48E-06	1.06E-06	1.32E-04	1.54E-03	1.88E-03	1.00E-05
92	GRID	545150	4163950	1.61E-03	5.20E-05	1.06E-05	1.52E-06	1.31E-04	1.78E-03	1.90E-03	1.00E-05
225	GRID	545400	4165150	1.61E-03	4.51E-05	1.09E-05	9.58E-07	1.31E-04	1.74E-03	1.91E-03	0.00E+00
240	GRID	545200	4165200	1.63E-03	2.62E-05	1.12E-05	1.11E-06	1.31E-04	1.79E-03	1.93E-03	0.00E+00
241	GRID	545250	4165200	1.63E-03	2.95E-05	1.06E-05	1.02E-06	1.31E-04	1.69E-03	1.92E-03	0.00E+00
191	GRID	545500	4165050	1.63E-03	6.77E-05	1.15E-05	1.06E-06	1.34E-04	1.83E-03	1.93E-03	1.00E-05
208	GRID	545450	4165100	1.64E-03	5.56E-05	1.19E-05	9.29E-07	1.34E-04	1.88E-03	1.94E-03	1.00E-05
71	GRID	545050	4163900	1.65E-03	3.77E-05	1.09E-05	1.30E-06	1.33E-04	1.78E-03	1.95E-03	0.00E+00
156	GRID	545550	4164950	1.67E-03	9.35E-05	8.30E-06	1.09E-06	1.39E-04	1.37E-03	1.97E-03	1.00E-05
224	GRID	545350	4165150	1.70E-03	4.14E-05	1.14E-05	1.13E-06	1.38E-04	1.84E-03	2.01E-03	0.00E+00
485	GRID	545200	4164000	1.68E-03	8.35E-05	9.97E-06	1.96E-06	1.40E-04	1.74E-03	1.99E-03	1.00E-05
218	GRID	545050	4165150	1.71E-03	1.95E-05	2.16E-05	9.37E-07	1.37E-04	3.29E-03	2.02E-03	0.00E+00
198	GRID	544950	4165100	1.72E-03	1.53E-05	2.06E-05	1.00E-06	1.37E-04	3.15E-03	2.03E-03	0.00E+00
644	GRID	544700	4164850	1.72E-03	1.90E-05	3.00E-05	1.09E-06	1.38E-04	4.54E-03	2.03E-03	0.00E+00
514	GRID	545350	4164100	1.56E-03	5.32E-04	8.20E-06	3.84E-06	1.66E-04	1.75E-03	1.85E-03	6.00E-05
173	GRID	545500	4165000	1.73E-03	7.86E-05	1.10E-05	1.12E-06	1.43E-04	1.77E-03	2.04E-03	1.00E-05
207	GRID	545400	4165100	1.75E-03	5.19E-05	1.20E-05	9.99E-07	1.42E-04	1.90E-03	2.07E-03	1.00E-05
499	GRID	545250	4164050	1.73E-03	1.57E-04	7.48E-06	2.71E-06	1.49E-04	1.49E-03	2.04E-03	2.00E-05
190	GRID	545450	4165050	1.76E-03	6.44E-05	1.23E-05	1.02E-06	1.44E-04	1.94E-03	2.08E-03	1.00E-05
223	GRID	545300	4165150	1.77E-03	3.74E-05	1.16E-05	1.18E-06	1.43E-04	1.87E-03	2.09E-03	0.00E+00
219	GRID	545100	4165150	1.80E-03	2.23E-05	1.90E-05	1.19E-06	1.44E-04	2.95E-03	2.13E-03	0.00E+00
222	GRID	545250	4165150	1.83E-03	3.33E-05	1.14E-05	1.08E-06	1.47E-04	1.83E-03	2.16E-03	0.00E+00
91	GRID	545100	4163950	1.83E-03	5.29E-05	1.16E-05	1.47E-06	1.49E-04	1.91E-03	2.16E-03	1.00E-05
155	GRID	545500	4164950	1.82E-03	9.17E-05	1.01E-05	1.18E-06	1.51E-04	1.64E-03	2.15E-03	1.00E-05
128	GRID	544750	4164900	1.85E-03	1.54E-05	3.20E-05	1.09E-06	1.47E-04	4.83E-03	2.18E-03	0.00E+00
658	GRID	544750	4164900	1.85E-03	1.54E-05	3.20E-05	1.09E-06	1.47E-04	4.83E-03	2.18E-03	0.00E+00
220	GRID	545150	4165150	1.85E-03	2.56E-05	1.47E-05	1.32E-06	1.48E-04	2.34E-03	2.19E-03	0.00E+00
179	GRID	544900	4165050	1.86E-03	1.33E-05	2.11E-05	9.89E-07	1.48E-04	3.23E-03	2.20E-03	0.00E+00
221	GRID	545200	4165150	1.86E-03	2.94E-05	1.11E-05	1.21E-06	1.49E-04	1.80E-03	2.19E-03	0.00E+00
513	GRID	545300	4164100	1.75E-03	3.66E-04	8.23E-06	3.65E-06	1.67E-04	1.73E-03	2.06E-03	4.00E-05
206	GRID	545350	4165100	1.86E-03	4.75E-05	1.17E-05	1.19E-06	1.51E-04	1.89E-03	2.20E-03	1.00E-05
70	GRID	545000	4163900	1.87E-03	3.89E-05	1.20E-05	1.22E-06	1.51E-04	1.93E-03	2.20E-03	0.00E+00
172	GRID	545450	4165000	1.88E-03	7.51E-05	1.23E-05	1.12E-06	1.55E-04	1.96E-03	2.22E-03	1.00E-05
199	GRID	545000	4165100	1.90E-03	1.84E-05	2.36E-05	1.10E-06	1.52E-04	3.61E-03	2.25E-03	0.00E+00
189	GRID	545400	4165050	1.89E-03	6.01E-05	1.28E-05	1.04E-06	1.55E-04	2.01E-03	2.24E-03	1.00E-05
484	GRID	545150	4164000	1.92E-03	8.18E-05	1.12E-05	1.70E-06	1.58E-04	1.88E-03	2.27E-03	1.00E-05
630	GRID	544650	4164800	1.92E-03	2.32E-05	2.59E-05	1.50E-06	1.54E-04	4.00E-03	2.27E-03	0.00E+00
141	GRID	544800	4164950	1.98E-03	1.34E-05	3.64E-05	1.32E-06	1.58E-04	5.51E-03	2.34E-03	0.00E+00
160	GRID	544850	4165000	1.97E-03	1.27E-05	3.03E-05	1.13E-06	1.57E-04	4.59E-03	2.32E-03	0.00E+00
205	GRID	545300	4165100	1.96E-03	4.29E-05	1.23E-05	1.26E-06	1.59E-04	1.98E-03	2.32E-03	0.00E+00
498	GRID	545200	4164050	1.96E-03	1.43E-04	8.20E-06	2.14E-06	1.66E-04	1.51E-03	2.31E-03	2.00E-05
154	GRID	545450	4164950	1.99E-03	8.82E-05	1.18E-05	1.22E-06	1.65E-04	1.90E-03	2.36E-03	1.00E-05
188	GRID	545350	4165050	2.03E-03	5.52E-05	1.29E-05	1.26E-06	1.65E-04	2.06E-03	2.40E-03	1.00E-05
200	GRID	545050	4165100	2.04E-03	2.15E-05	2.25E-05	9.97E-07	1.63E-04	3.42E-03	2.41E-03	0.00E+00
171	GRID	545400	4165000	2.04E-03	7.06E-05	1.32E-05	1.09E-06	1.67E-04	2.08E-03	2.41E-03	1.00E-05
204	GRID	545250	4165100	2.05E-03	3.80E-05	1.24E-05	1.16E-06	1.65E-04	1.97E-03	2.42E-03	0.00E+00
512	GRID	545250	4164100	1.97E-03	2.78E-04	8.30E-06	3.08E-06	1.78E-04	1.66E-03	2.33E-03	3.00E-05
528	GRID	545350	4164150	1.76E-03	9.26E-04	9.25E-06	5.06E-06	2.12E-04	2.09E-03	2.08E-03	1.00E-04
180	GRID	544950	4165050	2.12E-03	1.63E-05	2.46E-05	1.02E-06	1.69E-04	3.74E-03	2.50E-03	0.00E+00
201	GRID	545100	4165100	2.13E-03	2.49E-05	1.88E-05	1.22E-06	1.70E-04	2.92E-03	2.51E-03	0.00E+00
203	GRID	545200	4165100	2.12E-03	3.32E-05	1.22E-05	1.32E-06	1.70E-04	1.97E-03	2.50E-03	0.00E+00
69	GRID	544950	4163900	2.13E-03	3.95E-05	1.35E-05	1.13E-06	1.71E-04	2.13E-03	2.51E-03	0.00E+00
90	GRID	545050	4163950	2.13E-03	5.34E-05	1.26E-05	1.38E-06	1.72E-04	2.05E-03	2.51E-03	1.00E-05
202	GRID	545150	4165100	2.15E-03	2.87E-05	1.36E-05	1.41E-06	1.72E-04	2.19E-03	2.53E-03	0.00E+00
527	GRID	545300	4164150	1.99E-03	5.65E-04	9.48E-06	4.41E-06	2.02E-04	2.03E-03	2.34E-03	6.00E-05
187	GRID	545300	4165050	2.17E-03	4.97E-05	1.27E-05	1.35E-06	1.76E-04	2.05E-03	2.56E-03	1.00E-05
153	GRID	545400	4164950	2.19E-03	8.35E-05	1.32E-05	1.15E-06	1.80E-04	2.09E-03	2.58E-03	1.00E-05
170	GRID	545350	4165000	2.22E-03	6.48E-05	1.37E-05	1.33E-06	1.80E-04	2.19E-03	2.62E-03	1.00E-05
483	GRID	545100	4164000	2.22E-03	7.88E-05	1.27E-05	1.59E-06	1.82E-04	2.09E-03	2.62E-03	1.00E-05
497	GRID	545150	4164050	2.25E-03	1.28E-04	9.05E-06	1.88E-06	1.88E-04	1.59E-03	2.66E-03	1.00E-05
186	GRID	545250	4165050	2.29E-03	4.38E-05	1.32E-05	1.24E-06	1.85E-04	2.11E-03	2.72E-03	0.00E+00
181	GRID	545000	4165050	2.34E-03	2.01E-05	2.55E-05	1.17E-06	1.86E-04	3.90E-03	2.75E-03	0.00E+00
511	GRID	545200	4164100	2.27E-03	2.24E-04	8.33E-06	2.36E-06	1.96E-04	1.56E-03	2.67E-03	2.00E-05
617	GRID	544600	4164750	2.31E-03	2.67E-05	1.69E-05	1.69E-06	1.86E-04	2.71E-03	2.74E-03	0.00E+00
161	GRID	544900	4165000	2.34E-03	1.45E-05	2.31E-05	1.18E-06	1.86E-04	3.55E-03	2.76E-03	0.00E+00
645	GRID	544750	4164850	2.36E-03	1.88E-05	3.54E-05	1.23E-06	1.87E-04	5.36E-03	2.77E-03	0.00E+00
526	GRID	545250	4164150	2.27E-03	4.03E-04	9.67E-06	3.57E-06	2.11E-04	1.93E-03	2.67E-03	4.00E-05
169	GRID	545300	4165000	2.40E-03	5.83E-05	1.38E-05	1.45E-06	1.94E-04	2.23E-03	2.83E-03	1.00E-05
152	GRID	545350	4164950	2.40E-03	7.71E-05	1.42E-05	1.41E-06	1.96E-04	2.28E-03	2.84E-03	1.00E-05
185	GRID	545200	4165050	2.40E-03	3.80E-05	1.32E-05	1.45E-06	1.94E-04	2.14E-03	2.85E-03	0.00E+00
182	GRID	545050	4165050	2.47E-03	2.40E-05	2.30E-05	1.15E-06	1.97E-04	3.52E-03	2.91E-03	0.00E+00

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3)		1-hr (ug/m3)		Chronic	Acute	Annual (ug/m3)	
				DPM GLC	DPM GLC	Acrolein GLC	Acrolein GLC	Index	Index	PM2.5 GLC	PM2.5 GLC
				from construction	from Haul truck	from construction	from Haul truck	Hic	Hia	from construction	from Haul truck
631	GRID	544700	4164800	2.45E-03	2.35E-05	3.28E-05	1.28E-06	1.96E-04	4.97E-03	2.90E-03	0.00E+00
68	GRID	544900	4163900	2.47E-03	3.94E-05	1.52E-05	1.04E-06	1.99E-04	2.37E-03	2.92E-03	0.00E+00
184	GRID	545150	4165050	2.49E-03	3.26E-05	1.30E-05	1.50E-06	1.99E-04	2.12E-03	2.94E-03	0.00E+00
183	GRID	545100	4165050	2.52E-03	2.80E-05	1.81E-05	1.25E-06	2.01E-04	2.82E-03	2.97E-03	0.00E+00
541	GRID	545300	4164200	2.25E-03	8.38E-04	1.06E-05	5.40E-06	2.44E-04	2.33E-03	2.65E-03	9.00E-05
142	GRID	544850	4164950	2.54E-03	1.44E-05	3.31E-05	1.28E-06	2.01E-04	5.04E-03	2.99E-03	0.00E+00
89	GRID	545000	4163950	2.54E-03	5.34E-05	1.35E-05	1.27E-06	2.05E-04	2.15E-03	2.99E-03	1.00E-05
129	GRID	544800	4164900	2.56E-03	1.58E-05	4.13E-05	1.32E-06	2.04E-04	6.24E-03	3.03E-03	0.00E+00
659	GRID	544800	4164900	2.56E-03	1.58E-05	4.13E-05	1.32E-06	2.04E-04	6.24E-03	3.03E-03	0.00E+00
168	GRID	545250	4165000	2.58E-03	5.12E-05	1.38E-05	1.34E-06	2.08E-04	2.22E-03	3.05E-03	1.00E-05
151	GRID	545300	4164950	2.65E-03	6.93E-05	1.48E-05	1.56E-06	2.14E-04	2.38E-03	3.11E-03	1.00E-05
482	GRID	545050	4164000	2.65E-03	7.61E-05	1.47E-05	1.46E-06	2.15E-04	2.36E-03	3.12E-03	1.00E-05
496	GRID	545100	4164050	2.65E-03	1.16E-04	1.01E-05	1.71E-06	2.18E-04	1.73E-03	3.12E-03	1.00E-05
162	GRID	544950	4165000	2.67E-03	1.76E-05	2.81E-05	9.86E-07	2.13E-04	4.25E-03	3.17E-03	0.00E+00
510	GRID	545150	4164100	2.63E-03	1.87E-04	8.36E-06	2.06E-06	2.22E-04	1.52E-03	3.10E-03	2.00E-05
525	GRID	545200	4164150	2.60E-03	3.14E-04	9.87E-06	2.64E-06	2.31E-04	1.83E-03	3.08E-03	3.00E-05
167	GRID	545200	4165000	2.76E-03	4.41E-05	1.43E-05	1.60E-06	2.21E-04	2.32E-03	3.24E-03	0.00E+00
540	GRID	545250	4164200	2.58E-03	5.82E-04	1.10E-05	4.23E-06	2.50E-04	2.22E-03	3.05E-03	6.00E-05
150	GRID	545250	4164950	2.89E-03	6.08E-05	1.50E-05	1.46E-06	2.33E-04	2.40E-03	3.40E-03	1.00E-05
166	GRID	545150	4165000	2.89E-03	3.76E-05	1.42E-05	1.61E-06	2.31E-04	2.30E-03	3.41E-03	0.00E+00
163	GRID	545000	4165000	2.92E-03	2.20E-05	2.70E-05	1.22E-06	2.32E-04	4.12E-03	3.43E-03	0.00E+00
618	GRID	544650	4164750	2.98E-03	2.79E-05	2.75E-05	1.81E-06	2.37E-04	4.29E-03	3.51E-03	0.00E+00
165	GRID	545100	4165000	2.98E-03	3.19E-05	1.70E-05	1.27E-06	2.38E-04	2.66E-03	3.52E-03	0.00E+00
164	GRID	545050	4165000	3.00E-03	2.69E-05	2.31E-05	1.31E-06	2.39E-04	3.56E-03	3.54E-03	0.00E+00
553	GRID	545300	4164250	2.54E-03	1.47E-03	1.11E-05	6.84E-06	3.17E-04	2.62E-03	2.99E-03	1.60E-04
143	GRID	544900	4164950	3.07E-03	1.61E-05	2.97E-05	1.31E-06	2.45E-04	4.52E-03	3.64E-03	0.00E+00
149	GRID	545200	4164950	3.14E-03	5.19E-05	1.51E-05	1.77E-06	2.52E-04	2.46E-03	3.69E-03	1.00E-05
524	GRID	545150	4164150	3.05E-03	2.55E-04	1.02E-05	2.28E-06	2.62E-04	1.81E-03	3.61E-03	3.00E-05
539	GRID	545200	4164200	3.00E-03	4.39E-04	1.14E-05	3.00E-06	2.72E-04	2.10E-03	3.55E-03	5.00E-05
88	GRID	544950	4163950	3.14E-03	5.30E-05	1.61E-05	1.16E-06	2.53E-04	2.51E-03	3.71E-03	1.00E-05
509	GRID	545100	4164100	3.12E-03	1.61E-04	8.33E-06	1.84E-06	2.58E-04	1.49E-03	3.67E-03	2.00E-05
138	GRID	545250	4164900	3.21E-03	7.33E-05	1.60E-05	1.60E-06	2.59E-04	2.58E-03	3.77E-03	1.00E-05
495	GRID	545050	4164050	3.18E-03	1.07E-04	1.14E-05	1.54E-06	2.60E-04	1.90E-03	3.75E-03	1.00E-05
552	GRID	545250	4164250	2.94E-03	8.91E-04	1.20E-05	5.11E-06	3.02E-04	2.50E-03	3.46E-03	9.00E-05
668	GRID	545250	4164900	3.21E-03	7.33E-05	1.60E-05	1.60E-06	2.59E-04	2.58E-03	3.77E-03	1.00E-05
481	GRID	545000	4164000	3.27E-03	7.35E-05	1.74E-05	1.32E-06	2.65E-04	2.74E-03	3.87E-03	1.00E-05
148	GRID	545150	4164950	3.36E-03	4.38E-05	1.54E-05	1.71E-06	2.69E-04	2.51E-03	3.96E-03	0.00E+00
632	GRID	544750	4164800	3.38E-03	2.34E-05	4.10E-05	1.25E-06	2.69E-04	6.16E-03	3.99E-03	0.00E+00
130	GRID	544850	4164900	3.47E-03	1.67E-05	3.67E-05	1.50E-06	2.75E-04	5.58E-03	4.09E-03	0.00E+00
607	GRID	544600	4164700	3.45E-03	3.20E-05	1.83E-05	1.51E-06	2.75E-04	2.89E-03	4.07E-03	0.00E+00
660	GRID	544850	4164900	3.47E-03	1.67E-05	3.67E-05	1.50E-06	2.75E-04	5.58E-03	4.09E-03	0.00E+00
144	GRID	544950	4164950	3.49E-03	1.93E-05	3.09E-05	1.24E-06	2.78E-04	4.70E-03	4.13E-03	0.00E+00
137	GRID	545200	4164900	3.54E-03	6.23E-05	1.64E-05	1.96E-06	2.85E-04	2.68E-03	4.18E-03	1.00E-05
147	GRID	545100	4164950	3.54E-03	3.68E-05	1.54E-05	1.29E-06	2.83E-04	2.44E-03	4.19E-03	0.00E+00
667	GRID	545200	4164900	3.54E-03	6.23E-05	1.64E-05	1.96E-06	2.85E-04	2.68E-03	4.18E-03	1.00E-05
646	GRID	544800	4164850	3.56E-03	1.90E-05	4.79E-05	1.23E-06	2.83E-04	7.19E-03	4.21E-03	0.00E+00
551	GRID	545200	4164250	3.43E-03	6.20E-04	1.29E-05	3.50E-06	3.21E-04	2.39E-03	4.06E-03	7.00E-05
538	GRID	545150	4164200	3.54E-03	3.44E-04	1.19E-05	2.54E-06	3.08E-04	2.10E-03	4.19E-03	4.00E-05
146	GRID	545050	4164950	3.67E-03	3.04E-05	2.28E-05	1.45E-06	2.92E-04	3.53E-03	4.33E-03	0.00E+00
145	GRID	545000	4164950	3.67E-03	2.43E-05	2.82E-05	1.26E-06	2.93E-04	4.30E-03	4.34E-03	0.00E+00
523	GRID	545100	4164150	3.65E-03	2.14E-04	1.05E-05	1.99E-06	3.05E-04	1.82E-03	4.30E-03	2.00E-05
563	GRID	545250	4164300	3.29E-03	1.38E-03	1.33E-05	6.13E-06	3.69E-04	2.85E-03	3.88E-03	1.50E-04
508	GRID	545050	4164100	3.76E-03	1.43E-04	1.00E-05	1.63E-06	3.09E-04	1.70E-03	4.45E-03	2.00E-05
136	GRID	545150	4164900	3.90E-03	5.19E-05	1.66E-05	1.82E-06	3.12E-04	2.69E-03	4.60E-03	1.00E-05
666	GRID	545150	4164900	3.90E-03	5.19E-05	1.66E-05	1.82E-06	3.12E-04	2.69E-03	4.60E-03	1.00E-05
126	GRID	545200	4164850	3.96E-03	7.62E-05	1.76E-05	2.19E-06	3.19E-04	2.88E-03	4.68E-03	1.00E-05
654	GRID	545200	4164850	3.96E-03	7.62E-05	1.76E-05	2.19E-06	3.19E-04	2.88E-03	4.68E-03	1.00E-05
494	GRID	545000	4164050	4.01E-03	9.97E-05	1.31E-05	1.38E-06	3.24E-04	2.12E-03	4.73E-03	1.00E-05
87	GRID	544900	4163950	4.07E-03	5.18E-05	1.91E-05	1.07E-06	3.25E-04	2.94E-03	4.80E-03	1.00E-05
562	GRID	545200	4164300	3.90E-03	8.91E-04	1.44E-05	4.41E-06	3.78E-04	2.74E-03	4.59E-03	9.00E-05
619	GRID	544700	4164750	4.16E-03	2.87E-05	3.61E-05	1.78E-06	3.31E-04	5.55E-03	4.92E-03	0.00E+00
135	GRID	545100	4164900	4.23E-03	4.29E-05	1.69E-05	1.55E-06	3.38E-04	2.70E-03	4.99E-03	0.00E+00
550	GRID	545150	4164250	4.07E-03	4.63E-04	1.36E-05	2.87E-06	3.59E-04	2.41E-03	4.82E-03	5.00E-05
665	GRID	545100	4164900	4.23E-03	4.29E-05	1.69E-05	1.55E-06	3.38E-04	2.70E-03	4.99E-03	0.00E+00
131	GRID	544900	4164900	4.30E-03	1.84E-05	3.51E-05	1.36E-06	3.41E-04	5.34E-03	5.06E-03	0.00E+00
661	GRID	544900	4164900	4.30E-03	1.84E-05	3.51E-05	1.36E-06	3.41E-04	5.34E-03	5.06E-03	0.00E+00
537	GRID	545100	4164200	4.25E-03	2.81E-04	1.24E-05	2.18E-06	3.58E-04	2.13E-03	5.01E-03	3.00E-05
480	GRID	544950	4164000	4.34E-03	7.09E-05	2.13E-05	1.21E-06	3.49E-04	3.29E-03	5.12E-03	1.00E-05
119	GRID	545200	4164800	4.38E-03	9.52E-05	1.85E-05	2.46E-06	3.54E-04	3.06E-03	5.17E-03	1.00E-05
641	GRID	545200	4164800	4.38E-03	9.52E-05	1.85E-05	2.46E-06	3.54E-04	3.06E-03	5.17E-03	1.00E-05
125	GRID	545150	4164850	4.47E-03	6.29E-05	1.82E-05	1.92E-06	3.58E-04	2.93E-03	5.28E-03	1.00E-05
522	GRID	545050	4164150	4.43E-03	1.84E-04	1.09E-05	1.77E-06	3.65E-04	1.85E-03	5.23E-03	2.00E-05
653	GRID	545150	4164850	4.47E-03	6.29E-05	1.82E-05	1.92E-06	3.58E-04	2.93E-03	5.28E-03	1.00E-05
134	GRID	545050	4164900	4.52E-03	3.47E-05	2.18E-05	1.54E-06	3.59E-04	3.41E-03	5.33E-03	0.00E+00
664	GRID	545050	4164900	4.52E-03	3.47E-05	2.18E-05	1.54E-06	3.59E-04	3.41E-03	5.33E-03	0.00E+00
132	GRID	544950	4164900	4.67E-03	2.17E-05	3.34E-05	1.49E-06	3.72E-04	5.09E-03	5.53E-03	0.00E+00
662	GRID	544950	4164900	4.67E-03	2.17E-05	3.34E-05	1.49E-06	3.72E-04	5.09E-03	5.53E-03	0.00E+00
133	GRID	545000	4164900	4.70E-03	2.72E-05	2.91E-05	1.22E-06	3.73E-04	4.42E-03	5.54E-03	0.00E+00
663	GRID	545000	4164900	4.70E-03	2.72E-05	2.91E-05	1.22E-06	3.73E-04	4.42E-03	5.54E-03	0.00E+00
608	GRID	544650	4164700	4.72E-03	3.38E-05	2.93E-05	1.86E-06	3.75E-04	4.55E-03	5.57E-03	0.00E+00
571	GRID	545200	4164350	4.32E-03	1.40E-03	1.68E-05	5.45E-06	4.53E-04	3.25E-03	5.11E-03	1.50E-04
112	GRID	545200	4164750	4.76E-03	1.23E-04	1.90E-05	2.79E-06	3.86E-04	3.19E-03	5.62E-03	1.00E-05
507	GRID	545000	4164100	4.76E-03	1.29E-04	1.13E-05	1.48E-06	3.86E-04	1.86E-03	5.61E-03	1.00E-05
628	GRID	545200	4164750	4.76E-03	1.23E-04	1.90E-05	2.79E-06	3.86E-04	3.19E-03	5.62E-03	1.00E-05
561	GRID	545150	4164300	4.67E-03	6.42E-04	1.56E-05	3.47E-06	4.19E-04	2.78E-03	5.50E-03	7.00E-05
600	GRID	544600	4164650	4.90E-03	3.92E-05	2.09E-05	1.05E-06	3.90E-04	3.21E-03	5.78E-03	0.00E+00
124	GRID	545100	4164850	5.01E-03	5.11E-05	1.87E-05	1.82E-06	4.00E-04	3.00E-03	5.91E-03	1.00E-05
652	GRID	545100	4164850	5.01E-03	5.11E-05	1.87E-05	1.82E-06	4.00E-04	3.00E-03	5.91E-03	1.00E-05
549	GRID	545100	4164250	4.92E-03	3.69E-04	1.45E-05	2.44E-06	4.19E-04	2.47E-03	5.81E-03	4.00E-05
118	GRID	545150	4164800	5.05E-03	7.80E-05	1.95E-05	2.00E-06	4.06E-04	3.14E-03	5.97E-03	1.00E-05

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3) DPM GLC from construction	Annual (µg/m3) DPM GLC from Haul truck	1-hr (ug/m3) Acrolein GLC from construction	1-hr (ug/m3) Acrolein GLC from Haul truck	Chronic Index Hic	Acute Index Hia	Annual (ug/m3) PM2.5 GLC from construction	Annual (ug/m3) PM2.5 GLC from Haul truck
640	GRID	545150	4164800	5.05E-03	7.80E-05	1.95E-05	2.00E-06	4.06E-04	3.14E-03	5.97E-03	1.00E-05
536	GRID	545050	4164200	5.16E-03	2.36E-04	1.32E-05	1.96E-06	4.27E-04	2.21E-03	6.10E-03	3.00E-05
647	GRID	544850	4164850	5.28E-03	1.98E-05	4.10E-05	1.54E-06	4.19E-04	6.20E-03	6.24E-03	0.00E+00
493	GRID	544950	4164050	5.43E-03	9.26E-05	1.54E-05	1.28E-06	4.37E-04	2.44E-03	6.41E-03	1.00E-05
123	GRID	545050	4164850	5.54E-03	4.01E-05	2.02E-05	1.64E-06	4.42E-04	3.19E-03	6.55E-03	0.00E+00
521	GRID	545000	4164150	5.50E-03	1.63E-04	1.21E-05	1.63E-06	4.48E-04	2.00E-03	6.50E-03	2.00E-05
651	GRID	545050	4164850	5.54E-03	4.01E-05	2.02E-05	1.64E-06	4.42E-04	3.19E-03	6.55E-03	0.00E+00
570	GRID	545150	4164350	5.28E-03	1.01E-03	1.85E-05	4.18E-06	4.97E-04	3.30E-03	6.23E-03	1.10E-04
633	GRID	544800	4164800	5.63E-03	2.35E-05	5.67E-05	1.40E-06	4.47E-04	8.50E-03	6.65E-03	0.00E+00
111	GRID	545150	4164750	5.63E-03	9.97E-05	2.06E-05	2.25E-06	4.53E-04	3.34E-03	6.65E-03	1.00E-05
627	GRID	545150	4164750	5.63E-03	9.97E-05	2.06E-05	2.25E-06	4.53E-04	3.34E-03	6.65E-03	1.00E-05
117	GRID	545100	4164800	5.85E-03	6.20E-05	2.05E-05	2.07E-06	4.67E-04	3.29E-03	6.90E-03	1.00E-05
560	GRID	545100	4164300	5.70E-03	4.99E-04	1.72E-05	3.16E-06	4.91E-04	2.97E-03	6.74E-03	5.00E-05
639	GRID	545100	4164800	5.85E-03	6.20E-05	2.05E-05	2.07E-06	4.67E-04	3.29E-03	6.90E-03	1.00E-05
122	GRID	545000	4164850	6.05E-03	3.10E-05	2.95E-05	1.63E-06	4.81E-04	4.54E-03	7.14E-03	0.00E+00
650	GRID	545000	4164850	6.05E-03	3.10E-05	2.95E-05	1.63E-06	4.81E-04	4.54E-03	7.14E-03	0.00E+00
548	GRID	545050	4164250	6.05E-03	3.02E-04	1.57E-05	2.32E-06	5.03E-04	2.63E-03	7.15E-03	3.00E-05
106	GRID	545150	4164700	6.14E-03	1.32E-04	2.14E-05	2.84E-06	4.97E-04	3.55E-03	7.26E-03	1.00E-05
616	GRID	545150	4164700	6.14E-03	1.32E-04	2.14E-05	2.84E-06	4.97E-04	3.55E-03	7.26E-03	1.00E-05
506	GRID	544950	4164100	6.32E-03	1.18E-04	1.61E-05	1.39E-06	5.08E-04	2.56E-03	7.45E-03	1.00E-05
120	GRID	544900	4164850	6.37E-03	2.17E-05	3.93E-05	1.71E-06	5.05E-04	6.00E-03	7.51E-03	0.00E+00
648	GRID	544900	4164850	6.37E-03	2.17E-05	3.93E-05	1.71E-06	5.05E-04	6.00E-03	7.51E-03	0.00E+00
121	GRID	544950	4164850	6.41E-03	2.51E-05	3.57E-05	1.62E-06	5.09E-04	5.44E-03	7.57E-03	0.00E+00
649	GRID	544950	4164850	6.41E-03	2.51E-05	3.57E-05	1.62E-06	5.09E-04	5.44E-03	7.57E-03	0.00E+00
535	GRID	545000	4164200	6.41E-03	2.04E-04	1.41E-05	1.79E-06	5.23E-04	2.33E-03	7.56E-03	2.00E-05
479	GRID	544900	4164000	6.52E-03	6.76E-05	2.70E-05	1.12E-06	5.20E-04	4.11E-03	7.69E-03	1.00E-05
594	GRID	544600	4164600	6.57E-03	4.95E-05	2.31E-05	1.23E-06	5.22E-04	3.56E-03	7.74E-03	1.00E-05
110	GRID	545100	4164750	6.72E-03	7.77E-05	2.20E-05	2.28E-06	5.37E-04	3.55E-03	7.92E-03	1.00E-05
626	GRID	545100	4164750	6.72E-03	7.77E-05	2.20E-05	2.28E-06	5.37E-04	3.55E-03	7.92E-03	1.00E-05
116	GRID	545050	4164800	6.74E-03	4.74E-05	2.15E-05	1.61E-06	5.37E-04	3.37E-03	7.96E-03	1.00E-05
620	GRID	544750	4164750	6.77E-03	2.92E-05	4.82E-05	1.58E-06	5.36E-04	7.28E-03	7.97E-03	0.00E+00
638	GRID	545050	4164800	6.74E-03	4.74E-05	2.15E-05	1.61E-06	5.37E-04	3.37E-03	7.96E-03	1.00E-05
569	GRID	545100	4164350	6.61E-03	8.19E-04	2.06E-05	5.35E-06	5.87E-04	3.78E-03	7.79E-03	9.00E-05
601	GRID	544650	4164650	6.94E-03	4.19E-05	3.11E-05	1.56E-06	5.53E-04	4.77E-03	8.21E-03	0.00E+00
580	GRID	545150	4164450	6.41E-03	1.95E-03	1.93E-05	9.37E-06	6.61E-04	4.20E-03	7.56E-03	2.10E-04
587	GRID	545150	4164500	6.77E-03	7.88E-04	1.76E-05	8.87E-06	5.98E-04	3.86E-03	8.00E-03	8.00E-05
520	GRID	544950	4164150	7.10E-03	1.47E-04	1.69E-05	1.50E-06	5.72E-04	2.69E-03	8.37E-03	2.00E-05
559	GRID	545050	4164300	7.17E-03	4.07E-04	1.93E-05	3.34E-06	5.99E-04	3.30E-03	8.46E-03	4.00E-05
609	GRID	544700	4164700	7.30E-03	3.55E-05	4.07E-05	2.07E-06	5.79E-04	6.23E-03	8.61E-03	0.00E+00
105	GRID	545100	4164700	7.55E-03	1.01E-04	2.33E-05	2.33E-06	6.04E-04	3.75E-03	8.89E-03	1.00E-05
615	GRID	545100	4164700	7.55E-03	1.01E-04	2.33E-05	2.33E-06	6.04E-04	3.75E-03	8.89E-03	1.00E-05
547	GRID	545000	4164250	7.61E-03	2.57E-04	1.78E-05	2.39E-06	6.23E-04	2.95E-03	8.99E-03	3.00E-05
115	GRID	545000	4164800	7.75E-03	3.68E-05	2.92E-05	1.96E-06	6.15E-04	4.55E-03	9.14E-03	0.00E+00
637	GRID	545000	4164800	7.75E-03	3.68E-05	2.92E-05	1.96E-06	6.15E-04	4.55E-03	9.14E-03	0.00E+00
109	GRID	545050	4164750	8.04E-03	5.83E-05	2.36E-05	2.27E-06	6.40E-04	3.78E-03	9.49E-03	1.00E-05
625	GRID	545050	4164750	8.04E-03	5.83E-05	2.36E-05	2.27E-06	6.40E-04	3.78E-03	9.49E-03	1.00E-05
534	GRID	544950	4164200	8.19E-03	1.82E-04	1.77E-05	1.88E-06	6.61E-04	2.86E-03	9.66E-03	2.00E-05
492	GRID	544900	4164050	8.28E-03	8.63E-05	1.90E-05	1.21E-06	6.61E-04	2.94E-03	9.77E-03	1.00E-05
588	GRID	544600	4164550	8.32E-03	6.21E-05	2.76E-05	1.88E-06	6.62E-04	4.30E-03	9.82E-03	1.00E-05
529	GRID	544600	4164200	8.61E-03	9.70E-05	3.07E-05	1.76E-06	6.88E-04	4.73E-03	1.02E-02	1.00E-05
568	GRID	545050	4164350	8.57E-03	7.27E-04	2.33E-05	6.29E-06	7.35E-04	4.32E-03	1.01E-02	8.00E-05
114	GRID	544950	4164800	8.86E-03	3.02E-05	3.80E-05	1.94E-06	7.03E-04	5.82E-03	1.05E-02	0.00E+00
636	GRID	544950	4164800	8.86E-03	3.02E-05	3.80E-05	1.94E-06	7.03E-04	5.82E-03	1.05E-02	0.00E+00
579	GRID	545100	4164450	8.32E-03	1.76E-03	2.22E-05	6.86E-06	7.97E-04	4.24E-03	9.82E-03	1.90E-04
505	GRID	544900	4164100	8.99E-03	1.08E-04	2.05E-05	1.31E-06	7.20E-04	3.19E-03	1.06E-02	1.00E-05
515	GRID	544600	4164150	9.06E-03	8.50E-05	3.17E-05	1.50E-06	7.22E-04	4.85E-03	1.07E-02	1.00E-05
586	GRID	545100	4164500	8.84E-03	7.35E-04	2.02E-05	5.77E-06	7.56E-04	3.79E-03	1.04E-02	8.00E-05
593	GRID	545100	4164550	8.95E-03	3.73E-04	2.14E-05	5.24E-06	7.37E-04	3.89E-03	1.06E-02	4.00E-05
542	GRID	544600	4164250	9.08E-03	1.09E-04	3.17E-05	1.73E-06	7.26E-04	4.88E-03	1.07E-02	1.00E-05
104	GRID	545050	4164700	9.35E-03	7.61E-05	2.55E-05	2.71E-06	7.45E-04	4.12E-03	1.10E-02	1.00E-05
614	GRID	545050	4164700	9.35E-03	7.61E-05	2.55E-05	2.71E-06	7.45E-04	4.12E-03	1.10E-02	1.00E-05
558	GRID	545000	4164300	9.33E-03	3.48E-04	2.21E-05	3.44E-06	7.65E-04	3.74E-03	1.10E-02	4.00E-05
519	GRID	544900	4164150	9.57E-03	1.32E-04	2.25E-05	1.56E-06	7.66E-04	3.51E-03	1.13E-02	1.00E-05
554	GRID	544600	4164300	9.62E-03	1.18E-04	3.17E-05	1.82E-06	7.69E-04	4.89E-03	1.13E-02	1.00E-05
595	GRID	544650	4164600	9.62E-03	5.33E-05	3.24E-05	1.24E-06	7.64E-04	4.91E-03	1.14E-02	1.00E-05
108	GRID	545000	4164750	9.70E-03	4.56E-05	2.80E-05	2.17E-06	7.71E-04	4.40E-03	1.15E-02	0.00E+00
624	GRID	545000	4164750	9.70E-03	4.56E-05	2.80E-05	2.17E-06	7.71E-04	4.40E-03	1.15E-02	0.00E+00
581	GRID	544600	4164500	9.77E-03	7.50E-05	3.04E-05	2.32E-06	7.78E-04	4.78E-03	1.15E-02	1.00E-05
634	GRID	544850	4164800	9.84E-03	2.43E-05	4.85E-05	1.41E-06	7.79E-04	7.28E-03	1.16E-02	0.00E+00
113	GRID	544900	4164800	9.97E-03	2.62E-05	4.36E-05	1.82E-06	7.90E-04	6.63E-03	1.18E-02	0.00E+00
635	GRID	544900	4164800	9.97E-03	2.62E-05	4.36E-05	1.82E-06	7.90E-04	6.63E-03	1.18E-02	0.00E+00
546	GRID	544950	4164250	9.95E-03	2.29E-04	2.07E-05	2.31E-06	8.04E-04	3.36E-03	1.17E-02	2.00E-05
564	GRID	544600	4164350	9.99E-03	1.17E-04	3.12E-05	2.30E-06	8.00E-04	4.89E-03	1.18E-02	1.00E-05
572	GRID	544600	4164400	1.02E-02	1.05E-04	3.08E-05	2.59E-06	8.15E-04	4.87E-03	1.21E-02	1.00E-05
574	GRID	544600	4164450	1.02E-02	8.82E-05	3.09E-05	2.79E-06	8.15E-04	4.92E-03	1.21E-02	1.00E-05
102	GRID	545050	4164650	1.06E-02	1.08E-04	2.71E-05	3.55E-06	8.44E-04	4.48E-03	1.25E-02	1.00E-05
606	GRID	545050	4164650	1.06E-02	1.08E-04	2.71E-05	3.55E-06	8.44E-04	4.48E-03	1.25E-02	1.00E-05
503	GRID	544600	4164100	1.09E-02	7.31E-05	3.28E-05	1.37E-06	8.69E-04	4.99E-03	1.29E-02	1.00E-05
533	GRID	544900	4164200	1.09E-02	1.62E-04	2.48E-05	1.81E-06	8.75E-04	3.89E-03	1.29E-02	2.00E-05
602	GRID	544700	4164650	1.14E-02	4.46E-05	4.59E-05	2.03E-06	9.04E-04	7.02E-03	1.35E-02	0.00E+00
101	GRID	545050	4164600	1.15E-02	1.70E-04	2.89E-05	3.47E-06	9.25E-04	4.73E-03	1.36E-02	2.00E-05
599	GRID	545050	4164600	1.15E-02	1.70E-04	2.89E-05	3.47E-06	9.25E-04	4.73E-03	1.36E-02	2.00E-05
103	GRID	545000	4164700	1.18E-02	5.98E-05	2.82E-05	2.77E-06	9.41E-04	4.53E-03	1.40E-02	1.00E-05
613	GRID	545000	4164700	1.18E-02	5.98E-05	2.82E-05	2.77E-06	9.41E-04	4.53E-03	1.40E-02	1.00E-05
567	GRID	545000	4164350	1.18E-02	6.27E-04	2.71E-05	6.03E-06	9.78E-04	4.83E-03	1.39E-02	7.00E-05
578	GRID	545050	4164450	1.14E-02	1.58E-03	2.60E-05	6.55E-06	1.03E-03	4.76E-03	1.35E-02	1.70E-04
107	GRID	544950	4164750	1.20E-02	3.76E-05	4.00E-05	2.22E-06	9.48E-04	6.15E-03	1.41E-02	0.00E+00
623	GRID	544950	4164750	1.20E-02	3.76E-05	4.00E-05	2.22E-06	9.48E-04	6.15E-03	1.41E-02	0.00E+00
592	GRID	545050	4164550	1.21E-02	3.02E-04	3.00E-05	3.63E-06	9.79E-04	4.91E-03	1.43E-02	3.00E-05
585	GRID	545050	4164500	1.21E-02	6.15E-04	2.54E-05	5.40E-06	1.01E-03	4.49E-03	1.43E-02	7.00E-05

Table B2. Chronic Index, Acute Index and PM2.5 Calculation from ISCST and HARP Output Files - Shap Park Wetland Restoration Project

Receptor	Type	UTME	UTMN	Annual (µg/m3)		1-hr (ug/m3)		Chronic	Acute	Annual (ug/m3)	
				DPM GLC	DPM GLC	Acrolein GLC	Acrolein GLC	Index	Index	PM2.5 GLC	PM2.5 GLC
				from construction	from Haul truck	from construction	from Haul truck	Hic	Hia	from construction	from Haul truck
589	GRID	544650	4164550	1.26E-02	6.90E-05	3.25E-05	1.86E-06	1.00E-03	5.02E-03	1.49E-02	1.00E-05
557	GRID	544950	4164300	1.29E-02	3.14E-04	2.60E-05	3.65E-06	1.04E-03	4.33E-03	1.52E-02	3.00E-05
530	GRID	544650	4164200	1.34E-02	1.07E-04	4.36E-05	1.77E-06	1.07E-03	6.64E-03	1.59E-02	1.00E-05
518	GRID	544850	4164150	1.36E-02	1.20E-04	2.72E-05	1.52E-06	1.08E-03	4.20E-03	1.60E-02	1.00E-05
610	GRID	544750	4164700	1.38E-02	3.67E-05	5.77E-05	2.13E-06	1.09E-03	8.75E-03	1.63E-02	0.00E+00
504	GRID	544850	4164100	1.38E-02	9.88E-05	2.42E-05	1.34E-06	1.10E-03	3.73E-03	1.63E-02	1.00E-05
543	GRID	544650	4164250	1.40E-02	1.23E-04	4.30E-05	2.10E-06	1.11E-03	6.56E-03	1.65E-02	1.00E-05
605	GRID	545000	4164650	1.40E-02	8.35E-05	3.06E-05	2.55E-06	1.11E-03	4.84E-03	1.65E-02	1.00E-05
490	GRID	544600	4164050	1.40E-02	6.22E-05	4.03E-05	1.16E-06	1.11E-03	6.08E-03	1.66E-02	1.00E-05
545	GRID	544900	4164250	1.41E-02	2.05E-04	2.78E-05	2.45E-06	1.13E-03	4.41E-03	1.66E-02	2.00E-05
491	GRID	544850	4164050	1.43E-02	8.02E-05	2.27E-05	1.16E-06	1.14E-03	3.49E-03	1.69E-02	1.00E-05
555	GRID	544650	4164300	1.46E-02	1.38E-04	4.16E-05	1.95E-06	1.17E-03	6.38E-03	1.73E-02	1.00E-05
565	GRID	544650	4164350	1.52E-02	1.42E-04	4.03E-05	2.46E-06	1.21E-03	6.26E-03	1.79E-02	2.00E-05
582	GRID	544650	4164500	1.52E-02	8.66E-05	3.64E-05	2.44E-06	1.21E-03	5.67E-03	1.80E-02	1.00E-05
622	GRID	544900	4164750	1.54E-02	3.28E-05	4.82E-05	1.65E-06	1.22E-03	7.27E-03	1.81E-02	0.00E+00
532	GRID	544850	4164200	1.54E-02	1.47E-04	3.38E-05	1.89E-06	1.23E-03	5.23E-03	1.81E-02	2.00E-05
573	GRID	544650	4164400	1.55E-02	1.27E-04	3.87E-05	3.08E-06	1.23E-03	6.08E-03	1.83E-02	1.00E-05
612	GRID	544950	4164700	1.55E-02	4.89E-05	4.13E-05	2.01E-06	1.23E-03	6.34E-03	1.83E-02	1.00E-05
575	GRID	544650	4164450	1.55E-02	1.05E-04	3.71E-05	3.31E-06	1.24E-03	5.89E-03	1.83E-02	1.00E-05
598	GRID	545000	4164600	1.58E-02	1.26E-04	3.27E-05	2.82E-06	1.26E-03	5.18E-03	1.87E-02	1.00E-05
516	GRID	544650	4164150	1.63E-02	9.08E-05	4.69E-05	1.60E-06	1.30E-03	7.10E-03	1.92E-02	1.00E-05
591	GRID	545000	4164550	1.72E-02	2.09E-04	3.51E-05	4.07E-06	1.38E-03	5.72E-03	2.03E-02	2.00E-05
596	GRID	544700	4164600	1.74E-02	5.78E-05	5.25E-05	1.57E-06	1.38E-03	7.87E-03	2.05E-02	1.00E-05
566	GRID	544950	4164350	1.76E-02	5.39E-04	3.20E-05	5.77E-06	1.43E-03	5.51E-03	2.08E-02	6.00E-05
577	GRID	545000	4164450	1.73E-02	1.25E-03	3.12E-05	5.45E-06	1.47E-03	5.36E-03	2.05E-02	1.30E-04
584	GRID	545000	4164500	1.79E-02	4.27E-04	3.77E-05	4.91E-06	1.45E-03	6.21E-03	2.11E-02	5.00E-05
604	GRID	544950	4164650	1.94E-02	6.68E-05	4.16E-05	2.28E-06	1.54E-03	6.42E-03	2.29E-02	1.00E-05
556	GRID	544900	4164300	2.04E-02	2.81E-04	3.12E-05	3.47E-06	1.64E-03	5.06E-03	2.41E-02	3.00E-05
517	GRID	544800	4164150	2.09E-02	1.11E-04	4.49E-05	1.53E-06	1.66E-03	6.79E-03	2.47E-02	1.00E-05
621	GRID	544850	4164750	2.12E-02	3.07E-05	5.51E-05	1.62E-06	1.68E-03	8.26E-03	2.51E-02	0.00E+00
611	GRID	544900	4164700	2.17E-02	4.28E-05	5.31E-05	1.90E-06	1.72E-03	8.01E-03	2.57E-02	0.00E+00
531	GRID	544800	4164200	2.29E-02	1.36E-04	5.38E-05	1.93E-06	1.83E-03	8.12E-03	2.71E-02	1.00E-05
597	GRID	544950	4164600	2.31E-02	9.52E-05	4.03E-05	2.95E-06	1.84E-03	6.34E-03	2.74E-02	1.00E-05
544	GRID	544850	4164250	2.45E-02	1.86E-04	4.43E-05	2.56E-06	1.94E-03	6.82E-03	2.88E-02	2.00E-05
590	GRID	544950	4164550	2.65E-02	1.43E-04	4.10E-05	3.91E-06	2.10E-03	6.56E-03	3.12E-02	2.00E-05
603	GRID	544900	4164650	2.89E-02	5.70E-05	5.77E-05	2.12E-06	2.29E-03	8.75E-03	3.41E-02	1.00E-05
583	GRID	544950	4164500	2.89E-02	2.47E-04	4.39E-05	4.31E-06	2.31E-03	7.07E-03	3.43E-02	3.00E-05
576	GRID	544950	4164450	3.09E-02	5.59E-04	4.79E-05	5.77E-06	2.48E-03	7.81E-03	3.64E-02	6.00E-05

APPENDIX B

DISPERSION MODELING AND HEALTH RISK ASSESSMENT RUNS INPUT FILES

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Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Mitigated Emissions (Pounds/Day)

File Name: G:\Sharp Park\New\URBEMIS\Construction4.urb924

Project Name: Sharp Park - Construction - 6-month Duration

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

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/1/2012-5/14/2012 Active	5.21	18.32	**123.65**	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building 05/01/2012-05/14/2012	5.21	18.32	123.65	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building Off Road Diesel	1.42	11.80	4.44	0.00	0.00	0.08	0.08	0.00	0.08	0.08	1,370.68
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	3.79	6.52	119.21	0.12	0.60	0.31	0.91	0.22	0.25	0.47	12,320.61
Time Slice 5/15/2012-8/31/2012 Active	**14.53**	**153.21**	72.54	**0.13**	0.50	3.37	3.87	0.16	3.10	3.27	**21,777.38**
Mass Grading 05/15/2012-	14.53	153.21	72.54	0.13	0.50	3.37	3.87	0.16	3.10	3.27	21,777.38
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	9.34	75.64	44.36	0.00	0.00	0.58	0.58	0.00	0.54	0.54	7,635.08
Mass Grading On Road Diesel	5.10	77.42	25.47	0.13	0.49	2.78	3.27	0.16	2.56	2.72	13,861.70
Mass Grading Worker Trips	0.09	0.15	2.72	0.00	0.01	0.01	0.02	0.00	0.01	0.01	280.60
Time Slice 9/3/2012-9/14/2012 Active	5.76	59.80	26.77	0.05	90.20	1.35	91.55	18.86	1.24	20.10	9,091.81
Mass Grading 09/01/2012-	1.65	16.47	8.36	0.02	45.07	0.45	45.52	9.42	0.41	9.83	2,535.94
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	0.96	6.22	4.50	0.00	0.00	0.08	0.08	0.00	0.08	0.08	654.92
Mass Grading On Road Diesel	0.67	10.22	3.36	0.02	0.06	0.37	0.43	0.02	0.34	0.36	1,830.00
Mass Grading Worker Trips	0.02	0.03	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.02
Mass Grading 09/01/2012-	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	2.70	22.52	10.36	0.00	0.00	0.15	0.15	0.00	0.14	0.14	2,713.85
Mass Grading On Road Diesel	1.37	20.75	6.82	0.03	0.13	0.75	0.88	0.04	0.69	0.73	3,714.47
Mass Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.54
Time Slice 9/17/2012-9/28/2012 Active	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading 09/01/2012-	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	2.70	22.52	10.36	0.00	0.00	0.15	0.15	0.00	0.14	0.14	2,713.85
Mass Grading On Road Diesel	1.37	20.75	6.82	0.03	0.13	0.75	0.88	0.04	0.69	0.73	3,714.47
Mass Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.54

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Time Slice 10/1/2012-10/15/2012	5.21	18.32	**123.65**	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building 10/01/2012-10/15/2012	5.21	18.32	123.65	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building Off Road Diesel	1.42	11.80	4.44	0.00	0.00	0.08	0.08	0.00	0.08	0.08	1,370.68
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	3.79	6.52	119.21	0.12	0.60	0.31	0.91	0.22	0.25	0.47	12,320.61

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Off Highway Tractors, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds

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For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%
For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%
The following mitigation measures apply to Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation
For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%
For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

Phase Assumptions

Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 3443.04
Off-Road Equipment:
3 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
3 Off Highway Tractors (267 hp) operating at a 0.65 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 922.62
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 5
Fugitive Dust Level of Detail: Default

20 lbs per acre-day
On Road Truck Travel (VMT): 454.55
Off-Road Equipment:
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds
Off-Road Equipment:
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation
Off-Road Equipment:
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Detail Report for Winter Construction Mitigated Emissions (Pounds/Day)

File Name: G:\Sharp Park\New\URBEMIS\Construction4.urb924

Project Name: Sharp Park - Construction - 6-month Duration

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

CONSTRUCTION EMISSION ESTIMATES (Winter Pounds Per Day, Mitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 5/1/2012-5/14/2012 Active	5.21	18.32	**123.65**	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building 05/01/2012-05/14/2012	5.21	18.32	123.65	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building Off Road Diesel	1.42	11.80	4.44	0.00	0.00	0.08	0.08	0.00	0.08	0.08	1,370.68
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	3.79	6.52	119.21	0.12	0.60	0.31	0.91	0.22	0.25	0.47	12,320.61
Time Slice 5/15/2012-8/31/2012 Active	**14.53**	**153.21**	72.54	**0.13**	0.50	3.37	3.87	0.16	3.10	3.27	**21,777.38**
Mass Grading 05/15/2012-	14.53	153.21	72.54	0.13	0.50	3.37	3.87	0.16	3.10	3.27	21,777.38
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	9.34	75.64	44.36	0.00	0.00	0.58	0.58	0.00	0.54	0.54	7,635.08
Mass Grading On Road Diesel	5.10	77.42	25.47	0.13	0.49	2.78	3.27	0.16	2.56	2.72	13,861.70
Mass Grading Worker Trips	0.09	0.15	2.72	0.00	0.01	0.01	0.02	0.00	0.01	0.01	280.60
Time Slice 9/3/2012-9/14/2012 Active	5.76	59.80	26.77	0.05	90.20	1.35	91.55	18.86	1.24	20.10	9,091.81
Mass Grading 09/01/2012-	1.65	16.47	8.36	0.02	45.07	0.45	45.52	9.42	0.41	9.83	2,535.94
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	0.96	6.22	4.50	0.00	0.00	0.08	0.08	0.00	0.08	0.08	654.92
Mass Grading On Road Diesel	0.67	10.22	3.36	0.02	0.06	0.37	0.43	0.02	0.34	0.36	1,830.00
Mass Grading Worker Trips	0.02	0.03	0.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.02
Mass Grading 09/01/2012-	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	2.70	22.52	10.36	0.00	0.00	0.15	0.15	0.00	0.14	0.14	2,713.85
Mass Grading On Road Diesel	1.37	20.75	6.82	0.03	0.13	0.75	0.88	0.04	0.69	0.73	3,714.47
Mass Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.54
Time Slice 9/17/2012-9/28/2012 Active	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading 09/01/2012-	4.10	43.33	18.42	0.04	45.14	0.90	46.03	9.44	0.83	10.27	6,555.87
Mass Grading Dust	0.00	0.00	0.00	0.00	45.00	0.00	45.00	9.40	0.00	9.40	0.00
Mass Grading Off Road Diesel	2.70	22.52	10.36	0.00	0.00	0.15	0.15	0.00	0.14	0.14	2,713.85
Mass Grading On Road Diesel	1.37	20.75	6.82	0.03	0.13	0.75	0.88	0.04	0.69	0.73	3,714.47
Mass Grading Worker Trips	0.04	0.07	1.23	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.54
Time Slice 10/1/2012-10/15/2012	5.21	18.32	**123.65**	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29
Building 10/01/2012-10/15/2012	5.21	18.32	123.65	0.12	0.60	0.39	1.00	0.22	0.33	0.55	13,691.29

Building Off Road Diesel	1.42	11.80	4.44	0.00	0.00	0.08	0.08	0.00	0.08	0.08	1,370.68
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	3.79	6.52	119.21	0.12	0.60	0.31	0.91	0.22	0.25	0.47	12,320.61

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Off Highway Tractors, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds

For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

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The following mitigation measures apply to Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation
For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%
For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

Phase Assumptions

Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 0
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 3443.04
Off-Road Equipment:
3 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
3 Off Highway Tractors (267 hp) operating at a 0.65 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 922.62
Off-Road Equipment:
2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
3 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement
Total Acres Disturbed: 66
Maximum Daily Acreage Disturbed: 5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 454.55
Off-Road Equipment:
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

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Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds
Off-Road Equipment:
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation
Off-Road Equipment:
1 Pumps (53 hp) operating at a 0.74 load factor for 8 hours per day
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: G:\Sharp Park\New\URBEMIS\Construction4.urb924

Project Name: Sharp Park - Construction - 6-month Duration

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:

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012 TOTALS (tons/year unmitigated)	0.68	6.76	4.39	0.01	1.53	0.29	1.82	0.32	0.27	0.59	1,082.20
2012 TOTALS (tons/year mitigated)	0.68	6.76	4.39	0.01	0.70	0.15	0.85	0.15	0.14	0.29	1,082.20
Percent Reduction	0.00	0.00	0.00	0.00	54.00	49.58	53.29	53.41	49.65	51.70	0.00

Construction Mitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Mitigated

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2012	0.68	6.76	4.39	0.01	0.70	0.15	0.85	0.15	0.14	0.29	1,082.20
Building 05/01/2012-05/14/2012	0.03	0.09	0.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	68.46
Building Off Road Diesel	0.01	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.85
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.02	0.03	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.60
Mass Grading 05/15/2012-08/31/2012	0.57	6.05	2.87	0.01	0.02	0.13	0.15	0.01	0.12	0.13	860.21
Mass Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Off Road Diesel	0.37	2.99	1.75	0.00	0.00	0.02	0.02	0.00	0.02	0.02	301.59

Mass Grading On Road Diesel	0.20	3.06	1.01	0.01	0.02	0.11	0.13	0.01	0.10	0.11	547.54
Mass Grading Worker Trips	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.08
Mass Grading 09/01/2012-09/15/2012	0.01	0.08	0.04	0.00	0.23	0.00	0.23	0.05	0.00	0.05	12.68
Mass Grading Dust	0.00	0.00	0.00	0.00	0.23	0.00	0.23	0.05	0.00	0.05	0.00
Mass Grading Off Road Diesel	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.27
Mass Grading On Road Diesel	0.00	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.15
Mass Grading Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
Mass Grading 09/01/2012-09/30/2012	0.04	0.43	0.18	0.00	0.45	0.01	0.46	0.09	0.01	0.10	65.56
Mass Grading Dust	0.00	0.00	0.00	0.00	0.45	0.00	0.45	0.09	0.00	0.09	0.00
Mass Grading Off Road Diesel	0.03	0.23	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	27.14
Mass Grading On Road Diesel	0.01	0.21	0.07	0.00	0.00	0.01	0.01	0.00	0.01	0.01	37.14
Mass Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28
Building 10/01/2012-10/15/2012	0.03	0.10	0.68	0.00	0.00	0.00	0.01	0.00	0.00	0.00	75.30
Building Off Road Diesel	0.01	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.54
Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Worker Trips	0.02	0.04	0.66	0.00	0.00	0.00	0.01	0.00	0.00	0.00	67.76

Construction Related Mitigation Measures

The following mitigation measures apply to Phase: Mass Grading 5/15/2012 - 8/31/2012 - Excavation/Grading

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:

PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

For Graders, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:

PM10: 85% PM25: 85%

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For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Off Highway Tractors, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/30/2012 - Riffle Range Regrade

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Excavators, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Mass Grading 9/1/2012 - 9/15/2012 - Culvert Placement

For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%

For Tractors/Loaders/Backhoes, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 5/1/2012 - 5/14/2012 - Install Barriers, Signage, Dewatering Ponds

For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

The following mitigation measures apply to Phase: Building Construction 10/1/2012 - 10/15/2012 - Revegetation

For Pumps, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

For Water Trucks, the Diesel Particulate Filter (DPF) 1st Tier mitigation reduces emissions by:
PM10: 85% PM25: 85%

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Compliance Checklist
Greenhouse Gas Analysis

A. GENERAL PROJECT INFORMATION:

Instructions: Complete Sections A and B, below. Generally, only projects within the City and County of San Francisco can apply for a determination of consistency with the GHG Reduction Strategy.

Date: August 17, 2011

Project name: Significant Natural Resource Areas Management Plan **Case No**: 2005.1912E

Project address and block and lot: Various locations within San Francisco

MEA planner: Jessica Range

Brief Project description:

The San Francisco Recreation and Park Department (SFRPD) developed a Significant Natural Resource Areas Management Plan (SNRAMP), with the final draft plan published in February 2006. This SNRAMP contains detailed information on the biology, geology, and trails within 32 Natural Areas, 31 of which are in San Francisco and one of which (Sharp Park) is in Pacifica. The SNRAMP is intended to guide natural resource protection, habitat restoration, trail and access improvements, other capital projects, and maintenance activities over the next 20 years.

The proposed project, implementation of the SNRAMP, covers two categories of activity at Natural Areas in San Francisco: routine maintenance and programmatic projects, which are those projects that are not well defined at this time. The general actions under the SNRAMP that could affect emissions of greenhouse gases include operation of motorized equipment and the removal and replacement of invasive trees and other invasive vegetation with native trees and other native vegetation.

B. COMPLIANCE CHECKLIST TABLE

Complete and attach to this form the appropriate compliance table by determining project compliance with the identified regulations and providing project-level details in the discussion column. Please note that Table 1 applies to Private Development Projects, Table 2 applies to Municipal Projects, and Table 3 is for plan-level analysis. Projects that do not comply with an ordinance/regulation may be determined to be inconsistent with San Francisco's qualified GHG reduction strategy.

Compliance Checklist Table attached: ☐ Table 1. Private Development

☒ Table 2. Municipal Project

☐ Table 3. Area Plan for _____
(specify area)

C. DETERMINATION OF COMPLIANCE WITH CITY'S GHG REDUCTION STRATEGY

☒ Project Complies with San Francisco's *Strategies to Address Greenhouse Gas Emissions*

Project Notes:

The proposed project would emit GHGs primarily during construction of individual programmatic projects. Operational activities are not proposed to increase substantially and therefore any increase in GHGs from project operations (routine maintenance) would be minimal. Construction related GHG emissions would be short term and nominal given the anticipated level of construction activity required for programmatic projects. Although many of the GHG regulations are not applicable to the activities proposed by SFRPD because of the nature of the project (which includes primarily restoration, erosion control, trail development, and invasive vegetation removal), the SFRPD complies with existing regulations, such as the commuter benefit ordinance, emergency ride home program, and the mandatory recycling and composting ordinance. Further, the Natural Areas Management Plan would comply with all applicable City regulations identified as reducing greenhouse gas emissions, including the clean construction ordinance, which requires use of cleaner construction equipment and B20 biodiesel. Therefore, the proposed project would comply with San Francisco's GHG Reduction Strategy.

☐ Project Does Not Comply

If Project does not comply, provide discussion of non-compliant features:

_____

_____

_____

_____

_____

_____

Planner Name: Jessica Range **Date of Determination:** 8/24/11

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Compliance Checklist Table for Greenhouse Gas Analysis: Table 2. Municipal Projects

A. GENERAL PROJECT INFORMATION:

Date: August 17, 2011

Project name: Significant Natural Resource Areas Management Plan

Case No: 2005.1912E

Project address and block and lot: Various locations within San Francisco

Compliance Checklist Prepared By: John Bock, Tetra Tech

Date: August 17, 2011

B. COMPLIANCE CHECKLIST TABLE

Instructions: Complete the following table by determining project compliance with the identified regulations and providing project-level details in the discussion column. Projects that do not comply with an ordinance/regulation may be determined to be inconsistent with San Francisco's qualified GHG reduction strategy.

Table 2. Regulations Applicable to Municipal Projects

	Requirement	Project Compliance	Discussion
Transportation sector			
Commuter Benefits Ordinance (Environment Code, Section 421)	All City employees are offered commuter benefits for transit and vanpool expenses. The City Hall bike room provides secure bicycle parking, showers and lockers for bicycle commuters. City employees are also eligible for telecommuting and alternative work schedules.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City employees including San Francisco Recreation and Park Department (SFRPD) Natural Areas Program (NAP) staff are provided commuter benefits in accordance with Environment Code Section 421.
Emergency Ride Home Program	All City employees are automatically eligible for the emergency ride home program.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City employees, including NAP staff are automatically enrolled in the emergency ride home program.
Healthy Air and	Requires all new purchases or	☒ Project	The SFRPD follows the vehicle

	Requirement	Project Compliance	Discussion
Smog Ordinance (Environment Code, Chapter 4)	leases of passenger vehicles and light-duty trucks to be the cleanest and most efficient vehicles available on the market. There are also requirements for medium and heavy duty vehicles and for phasing out highly polluting vehicles (diesel MUNI buses).	Complies ☐ Not Applicable ☐ Project Does Not Comply	requirements of this ordinance. This is addressed in Section 3b, Fleet – Fuel Use and Reduction Measures, of the *San Francisco Recreation and Park Department Climate Action Plan Fiscal Year 2009-10.*
Biodiesel for Municipal Fleets (Executive Directive 06-02)	Requires all diesel using City Departments to begin using biodiesel (B20). Sets goals for all diesel equipment to be run on biodiesel by 2007 and goals for increasing biodiesel blends to B100.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	For the locations under the Significant Natural Resource Areas Management Plan, the SFRPD is implementing the biodiesel requirements of this ordinance, as documented in Section 3b, Fleet – Fuel Use and Reduction Measures, of the *San Francisco Recreation and Park Department Climate Action Plan Fiscal Year 2009-10.*
Clean Construction Ordinance (Administrative Code, Section 6.25)	Effective March 2009, all contracts for large (20+ day) City projects are required to: • Fuel diesel vehicles with B20 biodiesel, and • Use construction equipment that meet USEPA Tier 2 standards or best available control technologies for equipment over 25 hp.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	For all applicable contracts issued for work under the Significant Natural Resource Areas Management Plan, the NAP will include these requirements in its contract specifications, as required by the ordinance.
Bicycle Parking in City-Owned and Leased Buildings (Planning Code, Section 155.1)	Class 1 and 2 Bicycle Parking Spaces Class 1 Requirements: (A) Provide two spaces in buildings with 1-20 employees. (B) Provide four spaces in buildings with 21 to 50 employees. (C) In buildings with 51 to 300 employees, provide bicycle parking equal to at least five percent of the number of employees at that building, but no fewer than five bicycle spaces. (D) In buildings with more than 300 employees, provide bicycle parking equal to at least three percent of the number of employees at that building, but no fewer than 16 bicycle spaces. In addition to the Class 1 bicycle parking spaces provide Class 2	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project would not construct or renovate City-owned and leased buildings. Therefore, Planning Code Section 155.1 is not applicable to the proposed project.

	Requirement	Project Compliance	Discussion
	bicycle parking. Class 2 Requirements: (A) In buildings with one to 40 employees, at least two bicycle parking spaces shall be provided. (B) In buildings with 41 to 50 employees, at least four bicycle parking spaces shall be provided. (C) In buildings with 51 to 100 employees, at least six bicycle parking spaces shall be provided. (D) In buildings with more than 100 employees, at least eight bicycle parking spaces shall be provided. Wherever a responsible City official is required to provide eight or more Class 2 bicycle parking spaces, at least 50 percent of those parking spaces shall be covered.		
Bicycle parking in parking garages (Planning Code, Section 155.2)	(A) Every garage will supply a minimum of six bicycle parking spaces. (B) Garages with between 120 and 500 automobile spaces shall provide one bicycle space for every 20 automobile spaces. (C) Garages with more than 500 automobile spaces shall provide 25 spaces plus one additional space for every 40 automobile spaces over 500 spaces, up to a maximum of 50 bicycle parking spaces.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve parking garages. Therefore, Planning Code Section 155.2 is not applicable to the proposed project.
Transportation Management Programs (Planning Code, Section 163)	Requires new buildings or additions over a specified size (buildings >25,000 sf or 100,000 sf depending on the use and zoning district) within certain zoning districts (including downtown and mixed-use districts in the City's eastern neighborhoods and south of market) to implement a Transportation Management Program and provide on-site transportation management brokerage services for the life of the building.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project would not construct new buildings and would therefore not generate any greenhouse gas emissions as a result of vehicle trips generated by new buildings. Therefore, Planning Code Section 163 is not applicable to the proposed project.
Energy Efficiency Sector			
Resource Efficiency and	The ordinance specifies requirements for all city buildings	☐ Project	The proposed project would not construct or demolish buildings.

	Requirement	Project Compliance	Discussion
Green Building Ordinance (Environment Code, Chapter 7)	as well as requirements for construction and demolition debris recycling, and requirement for new construction. All new construction must comply achieve at a minimum the LEED® Silver standard. These buildings are required to perform commissions to ensure achievement of design standards. All other buildings are required to meet the following minimum specifications related to energy efficiency: 1. Toilets must use no more than 1.6 gal/flush 2. Showerheads must use no more than 1.5 gal/ min. 3. All lighting and electrical fixtures must meet specified requirements. 4. All fluorescent lamps must be replaced	Complies ☒ Not Applicable ☐ Project Does Not Comply	Therefore, this ordinance is not applicable to the proposed project.
Waste Reduction Sector			
Resource Efficiency and Green Building Ordinance (Environment Code, Chapter 7)	The ordinance requires all demolition (& new construction) projects to prepare a Construction and Demolition Debris Management Plan designed to recycle construction and demolition materials to the maximum extent feasible, with a goal of 75% diversion. The ordinance specifies requires for all city buildings to provide adequate recycling space	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project would not construct or demolish buildings. Therefore, this ordinance is not applicable to the proposed project.
Resource Conservation Ordinance (Environment Code, Chapter 5)	This ordinance establishes a goal for each City department to (i) maximize purchases of recycled products and (ii) divert from disposal as much solid waste as possible so that the City can meet the state-mandated 50% division requirement. Each City department shall prepare a Waste Assessment. The ordinance also requires the Department of the Environment to prepare a Resource Conservation Plan that facilitates waste reduction and recycling. The ordinance requires janitorial contracts to consolidate recyclable materials for	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City Departments, including the SFRPD, meet these resource conservation requirements.

	Requirement	Project Compliance	Discussion
	pick up. Lastly, the ordinance specifies purchasing requirements for paper products.		
Mandatory Recycling and Composting Ordinance (Environment Code, Chapter 19)	The mandatory recycling and composting ordinance requires all persons in San Francisco to separate their refuse into recyclables, compostables and trash, and place each type of refuse in a separate container designated for disposal of that type of refuse.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City Departments, including the SFRPD, meet these recycling and composting requirements. Minor quantities of solid waste and recyclable material would be generated during the management of the Natural Areas. Unless it can be used to create wildlife habitat, all large woody debris generated by the NAP would be composted in Golden Gate Park. The wood chips may be used to suppress understory invasive vegetation or could be used as beneficial mulch on other revegetation projects in the Natural Areas. The proposed project does not include a residential component.
Construction Recycled Content Ordinance (Administrative Code, Section 6.4)	Ordinance requires the use of recycled content material in public works projects to the maximum extent feasible and gives preference to local manufacturers and industry.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve public works projects that could incorporate recycled content materials. Therefore, this ordinance is not applicable to the proposed project.
Environment/Conservation Sector			
Street Tree Planting Requirements for New Construction (Planning Code Section 143)	Planning Code Section 143 requires new construction, significant alterations or relocation of buildings within many of San Francisco's zoning districts to plant on 24-inch box tree for every 20 feet along the property street frontage	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve constructing or altering buildings. Therefore, Planning Code Section 143 is not applicable to the proposed project. For management actions in San Francisco, the proposed project would remove invasive trees and replace them on a one-to-one basis with native trees.
Environmentally Preferable Purchasing Ordinance (Formerly Precautionary Purchasing Ordinance)	Requires City Departments to purchase products on the Approved Green Products List, maintained by the Department of the Environment. The items in the Approved Green Products List has been tested by San Francisco City Depts. and meet standards that are more rigorous than ecolabels in protecting our health and environment.	☒ Project Complies ☐ Not Applicable ☐ Project Does Not Comply	All City Departments, including the SFRPD, meet these purchasing requirements. The proposed project does not involve purchase of product types included on the Green Products List.

	Requirement	Project Compliance	Discussion
Tropical Hardwood and Virgin Redwood Ban (Environment Code, Chapter 8)	The ordinance prohibits City departments from procuring, or engaging in contracts that would use the ordinance-listed tropical hardwoods and virgin redwood.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve constructing or renovating buildings. Therefore, this ban is not applicable to the proposed project.
Wood Burning Fireplace Ordinance (San Francisco Building Code, Chapter 31, Section 3102.8)	Bans the installation of wood burning fire places except for the following: • Pellet-fueled wood heater • EPA approved wood heater • Wood heater approved by the Northern Sonoma Air Pollution Control District	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not involve installation of fireplaces. Therefore, this ordinance is not applicable to the proposed project.
Regulation of Diesel Backup Generators (San Francisco Health Code, Article 30)	Requires: All diesel generators to be registered with the Department of Public Health All new diesel generators must be equipped with the best available air emissions control technology.	☐ Project Complies ☒ Not Applicable ☐ Project Does Not Comply	The proposed project does not include a diesel generator. Therefore, this regulation is not applicable to the proposed project.

Summary of Department Climate Action Plan: For municipal projects only, provide a summary for the respective Department's Climate Action Plan as a separate attachment.

Summary of Department Climate Action Plan: ☒ Included ☐ Not Included

In the San Francisco Recreation and Park Department's climate action plans, the SFRPD actions to reduce operational greenhouse gas emissions toward the City's goal of an 80 percent reduction by 2050 include the following:

- Energy Efficiency and Conservation: The SFRPD is working with the Energy Efficiency Services of the San Francisco Public Utilities Commission (SFPUC) to reduce energy use through the selection of operational equipment such as electrical fixtures and sprinkler heads, design standards enforcement, and use of the San Francisco Greening Checklist for exterior spaces.
- Renewable Energy Generation: The SFRPD is working with the SFPUC to assess its facilities' solar potential and identify potential co-generation sites.

- Information Technology (IT): IT energy conservation measures include power management tools for all personal computers and monitors. The SFRPD plan includes full compliance by the third quarter of fiscal year 2010 with the City's adopted policy of the Committee on Information Technology (COIT).
- Green Building: The SFRPD plan includes compliance with the City's Environmental Code to achieve Leadership in Energy and Environmental Design (LEED®) certification.
- Fleets and Fuel: The SFRPD has identified specific plans to retire older vehicles to achieve fuel savings, maintenance cost savings, and lower residual costs for older vehicles. Further, the SFRPD only purchases clean light-duty passenger cars and trucks.
- Employee Commute: The SFRPD plan includes measures to reduce vehicle trips traveled by promoting alternative transportation incentives to its employees.
- Zero Waste: The SFRPD is close to realizing its goal of 100 percent compliance with the City's recycling initiative.
- Green Product Purchasing: The SFRPD uses the City's Approved Catalog to purchase environmentally conscious products.
- Carbon Sequestration: The SFRPD promotes the City's urban forestry program through tree planting campaigns and supports other City departments in their participation in the urban forest program.
- Community Wide Emissions: The SFRPD actions include providing community support to reduce greenhouse gas emissions through programs related to recycling, biodiversity, bicycling, and community education. To encourage recycling, the SFRPD is currently posting signs at all facilities to educate users on the importance of recycling and directing them on where to place their recyclables. For biodiversity, the NAP and SFRPD volunteer programs maintain and enhance natural biodiversity at many of SFRPD's park sites. Related to bicycling, the SFRPD will promote bicycling to and within SFRPD facilities by installing bike parking racks and SF Bicycle Route maps at all facilities and by providing bicycle access and program information on the SFRPD website and other publications. The community education efforts include holding recycling education seminars at SFRPD recreation facilities.