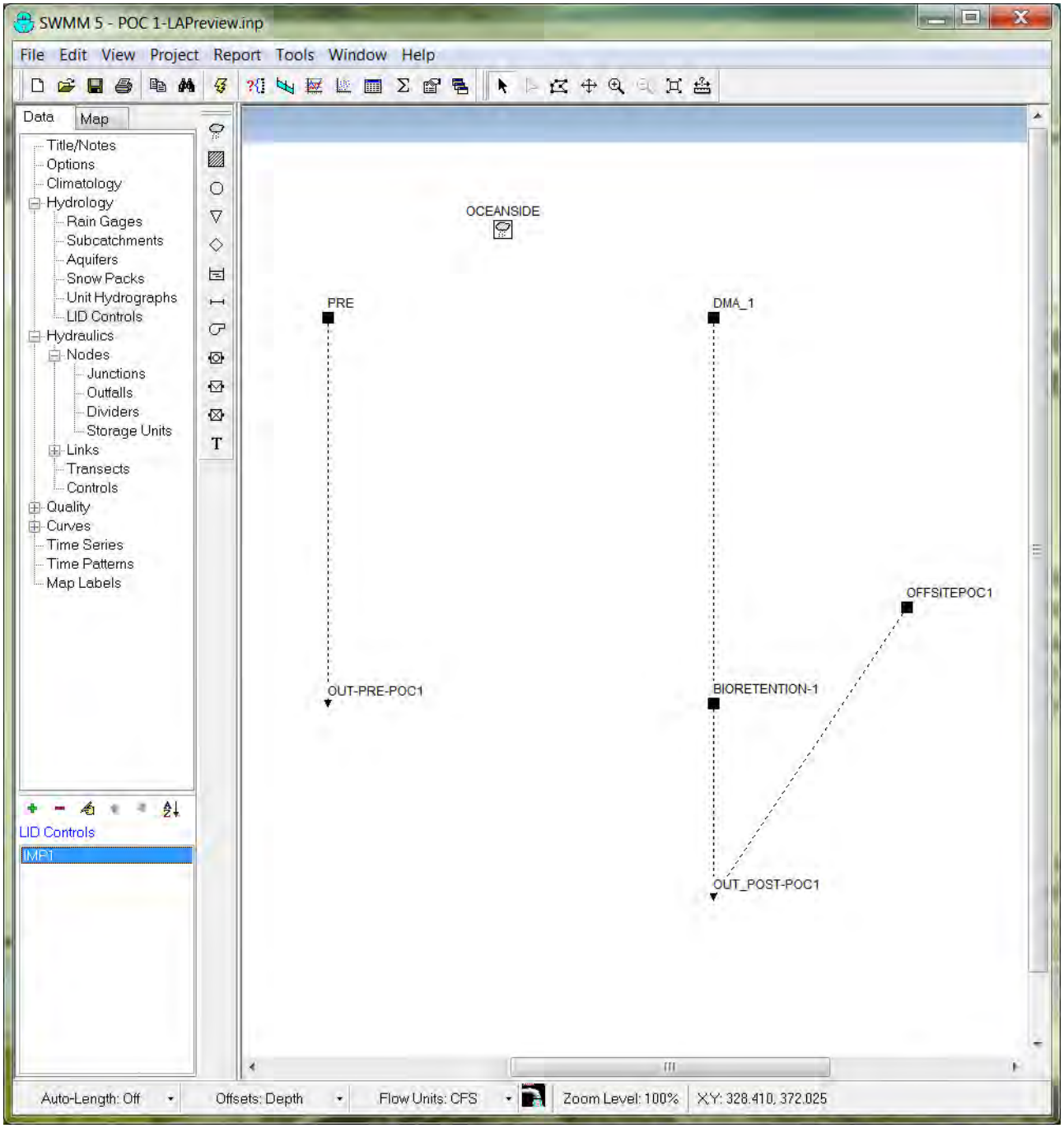
POC 1 SWMM – MODEL TOPOLOGY



ATTACHMENT 8

Soils Maps

http://uknow.brwncald.com/wastewater/MapOL.aspx

uKnow

File Edit View Favorites Tools Help

Brown AND Caldwell **uKnow** San Diego BMP Sizing Calculator (v3.0)

Home Contacts Legal Logout

Enter address - street, city... Find

Location | Raingauge | Rain Contours

Map data provided by OpenStreetMap

Map Details

Manage Basins

- San Diego County - HMP

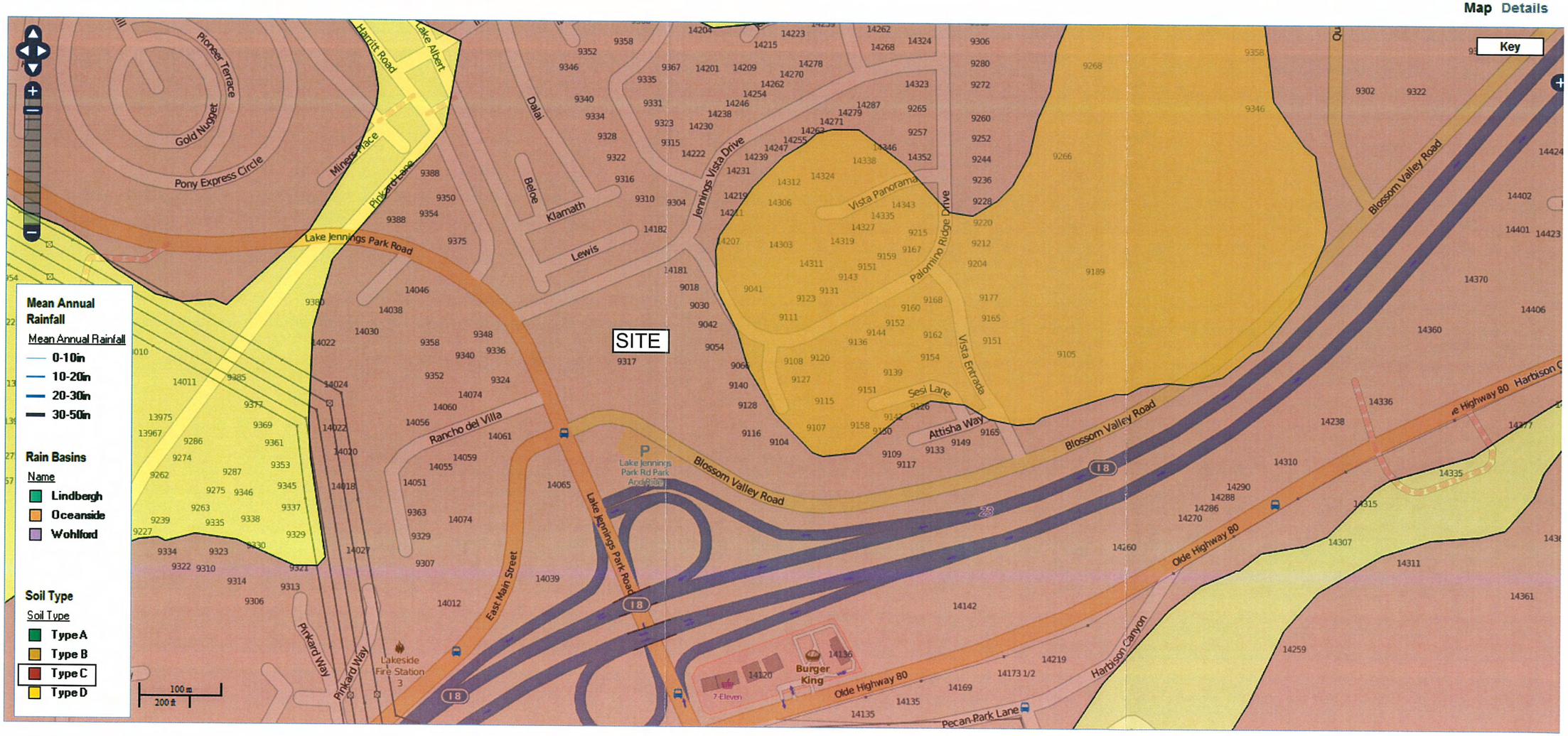
Manage Map Layers

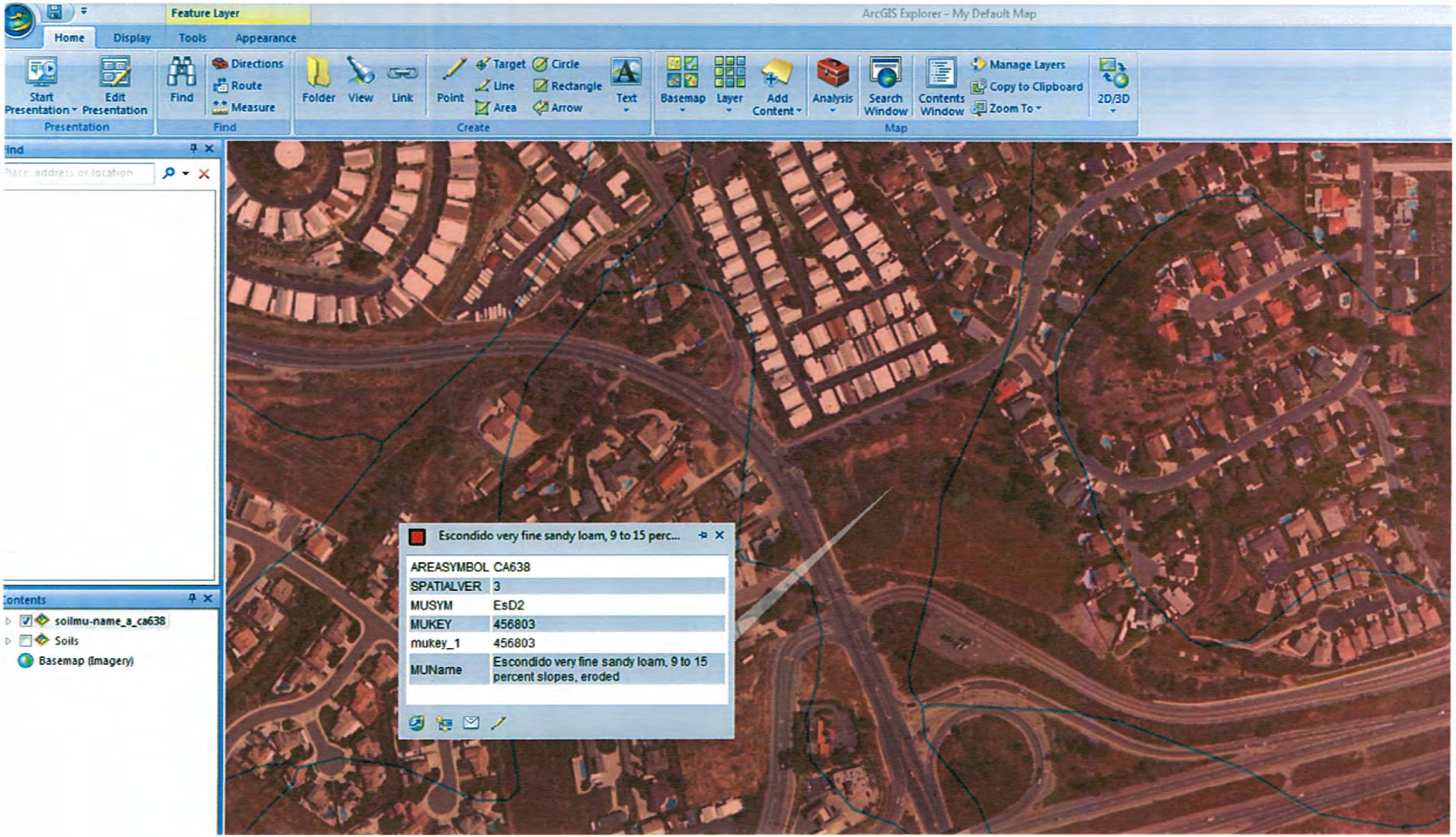
- Rain Gauges
- Mean Annual Rainfall
- Rain Basins
- Soil Type

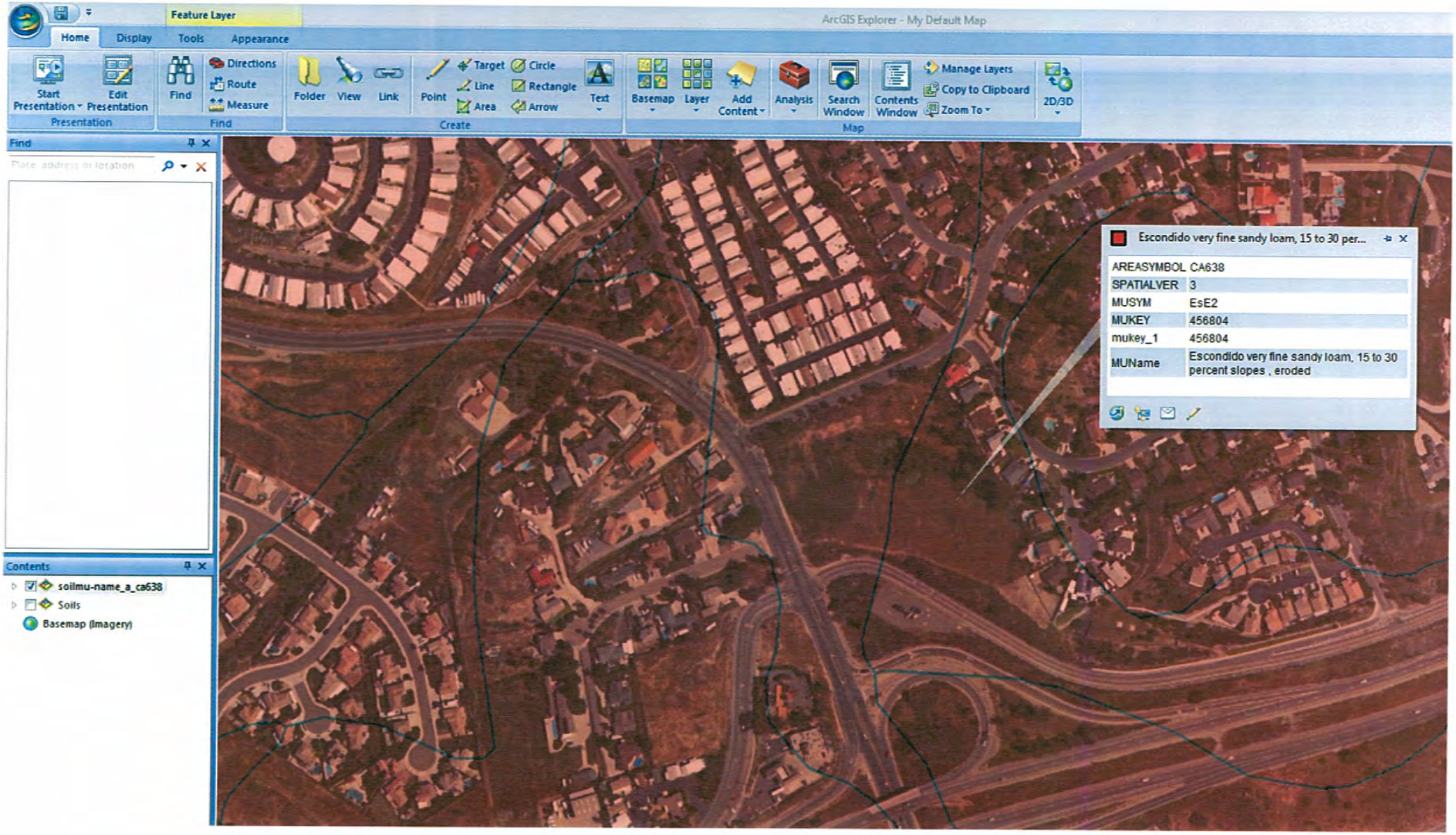
Select a Tool

Toolkit: HydroMod Tools

Tool: Basin Manager




Feature Layer
ArcGIS Explorer - My Default Map
Home
Display
Tools
Appearance
Start Presentation
Edit Presentation
Presentation
Find
Directions
Route
Measure
Find
Folder
View
Link
Point
Target
Circle
Line
Rectangle
Area
Arrow
Text
Create
Basemap
Layer
Add Content
Analysis
Search Window
Contents Window
Manage Layers
Copy to Clipboard
Zoom To
2D/3D
Map
Find
Place, address or location
Contents
soilmu-name_a_ca638
Soils
Basemap (Imagery)
Escondido very fine sandy loam, 9 to 15 perc...
AREASYMBOL CA638
SPATIALVER 3
MUSYM EsD2
MUKEY 456803
mukey_1 456803
MUName Escondido very fine sandy loam, 9 to 15 percent slopes, eroded


Feature Layer
ArcGIS Explorer - My Default Map
Home
Display
Tools
Appearance
Start Presentation
Edit Presentation
Presentation
Find
Directions
Route
Measure
Find
Folder
View
Link
Point
Target
Line
Area
Circle
Rectangle
Arrow
Text
Create
Basemap
Layer
Add Content
Analysis
Search Window
Contents Window
Manage Layers
Copy to Clipboard
Zoom To
Map
2D/3D
Find
Contents
soilmu-name_a_ca638
Soils
Basemap (Imagery)
Escondido very fine sandy loam, 15 to 30 per...
AREASYMBOL CA638
SPATIALVER 3
MUSYM EsE2
MUKEY 456804
mukey_1 456804
MUName Escondido very fine sandy loam, 15 to 30 percent slopes , eroded

Hydrologic Soil Group—San Diego County Area, California
(LAKE JENNINGS)

Map Scale: 1:2,290 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 7, Nov 15, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 2, 2010—May 6, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — San Diego County Area, California (CA638)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
EsD2	Escondido very fine sandy loam, 9 to 15 percent slopes, eroded	C	4.4	45.1%
EsE2	Escondido very fine sandy loam, 15 to 30 percent slopes , eroded	C	5.3	54.9%
Totals for Area of Interest			**9.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

ATTACHMENT 9

Summary Files from the SWMM Model

LAKE JENNINGS – HMP MANAGEMENT WITH BIORETENTION – POC1. RESULTS.

```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.0 (Build 5.0.022)
--------------------------------------------------------------

LAKE JENNINGS - HMP MANAGEMENT WITH BIORETENTION - POC1

*******************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
*******************************************************


****************
Analysis Options
****************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... NO
  Water Quality .......... NO
Infiltration Method ...... GREEN_AMPT
Starting Date ............ AUG-29-1951 00:00:00
Ending Date .............. MAY-23-2008 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 01:00:00
Wet Time Step ............ 00:15:00
Dry Time Step ............ 04:00:00


**************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
**************************     ---------       -------
Total Precipitation ......      2900.390       674.510
Evaporation Loss .........        90.585        21.066
Infiltration Loss ........      2121.378       493.344
Surface Runoff ...........       702.256       163.316
Final Surface Storage ....         0.030         0.007
Continuity Error (%) .....        -0.478


**************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......       702.249       228.838
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........       702.249       228.838
Internal Outflow .........         0.000         0.000
Storage Losses ...........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.000         0.000
Continuity Error (%) .....         0.000


***************************
Subcatchment Runoff Summary
***************************

-------------------------------------------------------------------------------------------------------
                         Total      Total      Total      Total      Total       Total     Peak  Runoff
                        Precip      Runon       Evap       Infil     Runoff      Runoff    Runoff   Coeff
Subcatchment                in         in         in         in         in    10^6 gal      CFS
-------------------------------------------------------------------------------------------------------
DMA_1                  674.51       0.00      45.16     275.77     358.36       41.12     4.93   0.531
BIORETENTION-1         674.51   14497.27     907.69       0.00   14376.22       40.77     5.00   0.948
PRE                    674.51       0.00      16.01     522.39     138.83       97.26    28.85   0.206
OFFSITEPOC1            674.51       0.00      18.09     503.66     155.74       90.79    24.12   0.231
```

****
LID Performance Summary
****

Subcatchment	LID Control	Total Inflow in	Evap Loss in	Infil Loss in	Surface Outflow in	Drain Outflow in	Init. Storage in	Final Storage in	Pcnt. Error
BIORETENTION-1	IMP1	15171.78	907.69	0.00	814.69	13561.55	0.00	1.10	-0.75

Analysis begun on: Mon Feb 23 15:12:51 2015
Analysis ended on: Mon Feb 23 15:13:07 2015
Total elapsed time: 00:00:16

ATTACHMENT 10: RESPONSE TO COMMENTS

Comments 6-1 to 6-3:

Notes to Applicant. No response needed.

Comment 6-4:

6-4 Attachment H, Figure 2 (pdf page 67 of 120): The existing upstream drainage facility is sized as a 30-inch RCP. The proposed drainage facility used to carry by-pass flows is sized as a new 24-inch RCP pipe. Why isn't the new RCP pipe equal in size or larger?

Response:

Although the comment is out of the scope of a hydromodification analysis, REC appreciated the comment and believes it deserves an explanation. The 30" pipe upstream has been overdesigned by others. There is a high-slope 18" pipe immediately upstream of the 30" pipe, and the approximately 15 ft long 30" pipe was designed using a small slope (0.5% or less we believe) and Manning's equation, when Manning's equation does not apply in this case, as the flow at the entrance of the 30" is highly supercritical and the pipe is not long enough to establish normal conditions as defined by Manning's equation. A proper design would have called for a gradually varied profile and establish that an 18" pipe (or at most a 24" pipe) was enough to carry the flows here. Once the flow discharges and is re-captured by the private system, the slope of the private system is considered for the design, and the selection of a 24" pipe is the correct solution. In other words, REC did not allow an over-design issue to carry out downstream.

It is important to notice that this issue is not relevant for hydromodification purposes and it is not part of the scope of the hydromodification report.

Solution: No action needed.

Comments 6-5 to 6-14:

6-5 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 72 of 120): Return period (yr) 10.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

18.61 - 18.55 = 0.06

6-6 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 72 of 120): Return period (yr) 9.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

17.34 - 16.94 = 0.40

6-7 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 72 of 120): Return period (yr) 7.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

15.85 - 14.37 = 1.48

6-8 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 72 of 120): Return period (yr) 6.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

15.37 - 14.18 = 1.19

6-9 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 72 of 120): Return period (yr) 4.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

13.92 - 12.57 = 1.35

6-10 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 78 of 120): Return period (yr) 10.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

18.61 - 18.55 = 0.06

6-11 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 78 of 120): Return period (yr) 9.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

17.34 - 16.94 = 0.40

6-12 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 78 of 120): Return period (yr) 7.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

15.85 - 14.37 = 1.48

6-13 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 78 of 120): Return period (yr) 6.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

15.37 - 14.18 = 1.19

6-14 Attachment H, Peak Flows calculated with Cunannane Ploting Position - POC 1 (pdf page 78 of 120): Return period (yr) 4.00, Is there a rounding error introduced in the reduction value? The reduction results shown is not correct per the subtraction of the pre- and post-development values shown.

13.92 - 12.57 = 1.35

Note: There is the same response to comments 6-5 to 6-14 (10 comments) as the issue is the same.

Response to comments 6-5 to 6-14

First, the reviewer should know that the method is called ***Cunnane Plotting*** Position, not ***Cunannane Ploting*** Position. This is obviously a typo in both words but care should be exercised when reviewing another engineers' work. Second, and more importantly, it is amazing that the reviewer is calling reduction results not correct when the results are shown with two digits of precision, and the difference within the subtraction made with the rounding values is only 0.01 cfs in the cases pointed out, which by definition is an expected error when a subtraction or an addition is made between rounded numbers. In other words, it is well known in mathematics that when two numbers are rounded to 2 decimal points and both numbers are added or subtracted the result is correct within ± 0.01. For example 2.0049 – 1.9951 is rounded as 2.00 – 2.00 = 0.00 but if the operation is not rounded 2.0049 – 1.9951 = 0.0098 which is rounded as 0.01 as a result. So the difference arises by rounding the results (in REC's case, as performed by Excel) or by rounding each number in the operation (in the case of the reviewer).

Therefore, in the example the results are correct and the rounding is correct but the precision is lost because of the mathematics of rounding. It is worth noticing that as the model was updated, the table was re-calculated and 3 digit of precision are now added. Please note that the last digit may not be accurate.

Solution: No change needed.

Comment 6-15:

6-15 Attachment H, Figure 2 (pdf page 87 of 120): Figure 2 is labeled as "Pre-Development Hydrology, Point of Compliance". Should Figure 2 be labeled / identified as the post-development hydrology since the proposed conditions is displayed?

Response:

Reviewer is correct. Label on Figure 2 will be updated.

Solution: Replace Pre-development for Post-development in text of Figure 2.

Comment 6-16:

6-16 Attachment H, Figure 2 (pdf page 87 of 120): The existing upstream drainage facility is sized as a 30-inch RCP. The proposed drainage facility used to carry by-pass flows is sized as a new 24-inch RCP pipe. Why isn't the new RCP pipe equal in size or larger?

Response:

Same comment as 6-4. See response for comment 6-4.

Solution: No action needed.

Comment 6-17 (note to applicant):

6-17 Attachment H, Figure 2 (pdf page 87 of 120): Reviewer notes: The proposed site development discharge location into the HMP / WQ basin is located close to the HMP / WQ basin proposed grated inlet.

Response:

Comment noted. Reviewer should know that the surface ponding is relatively high (16 inches), so the water will not discharge into the grated inlet until after the pond is full. However, final design of the curb opening (spillway) will be re-directed in order to avoid that the entering flow hits the grate structure.

Solution: Incorporate new figure with location of curb opening changed.

Comment 6-18:

6-18 Attachment H, Bioretention Detail for IMP Section A-A (pdf page 88 of 120): Are fences / restraining measures warranted as a result of the retaining wall's vertical drop from proposed grade to the top of the basin's soil layer?

Response:

Comment noted. The comment is outside of the scope of a hydromodification review. REC appreciated the comment but reviewer should be aware that Section A-A is not a construction detail but a hydrologic detail. Not only a fence will be provided along the street, but also walls that separate the bio-retention from the adjacent properties will be provided.

Solution: No action needed.

Comment 6-19:

6-19 Attachment H, Bioretention Detail for IMP Section A-A (pdf page 88 of 120): The detail does not show a proposed underdrain system connecting into the proposed inlet. Are there blind connections of the proposed underdrain into the storm drain system?

Response:

Although the report has not being created for final engineering, and although the details in terms of the French Drain system will be provided in final engineering plans, REC considers that is necessary to provide a better plan view and details to clarify that the French Drain System is constrained by a metallic plate, and blind connections are not included in the drainage system, while offsite flows and overflows from the grate are not constrained. Also, understanding of the drainage system can be improved by indicate how the section was taken. Please see new details in Figure 2, Bio-retention Detail and LID orifice detail.

Solution: Improve figure 2, bio-retention detail and LID orifice detail.

Comment 6-20:

6-20 Attachment H, LID Orifice Detail (pdf page 89 of 120): What is the dimension of the orifice opening as it is not shown in the detail?

Response:

Orifice was 1.75 inches in diameter, per Table 2 of the report, and per the C coefficient calculated in the LID module. However, after updating the report, orifice wa increased to 2.5 inches. A note will be included in the detail.

Solution: Include the diameter of the low flow orifice in the detail.

Comment 6-21 (note to applicant):

6-21: Attachment H, Hydrology Map Proposed Conditions Sheet 1 of 1 (pdf page 90 of 120): Reviewer notes: The proposed site development discharge location into the HMP / WQ basin is located close to the HMP / WQ basin proposed grated inlet.

Response:

Same comment as 6-17. See response for comment 6-17.

Solution: No action needed.

Comment 6-22 (note to applicant):

6-22: Attachment H, Attachment 7. EPA SWMM Figures and Explanations (pdf page 96 of 120): Reviewer notes: The site specific geotechnical report was not included in the HMP study for review. Reviewer did not confirm / verify soil characteristic values.

Response:

A USDSA Soil Map has been provided to verify soil type. Suction head, conductivity and initial deficit values are defined as a function of the hydrologic soil type, and the values shown are the typical values used in more than 80 projects approved in San Diego, including more than 5 approved by the County.

Solution: No action needed.

Comment 6-23 (note to applicant):

6-23: Attachment H, Infiltration Editor (pdf page 100 of 120): Reviewer notes: The site specific geotechnical report was not included in the HMP study for review. Reviewer did not confirm / verify soil characteristic values.

Response:

Same comment than 6-22. See response there.

Solution: No action needed.

Comment 6-24:

6-24: Attachment H, Outfall OUT-PRE-POC1 (pdf page 101 of 120): Is the outfall OUT-PRE-POC1 connecting into a storm drain system or discharging to open channel? The downstream boundary is shown as "FREE". If the outfall is connecting into a storm drain system has the downstream system been analyzed?

Response:

The comment is irrelevant to the hydromodification analysis as required by the HMP document. In all hydromodification studies, it is assumed that no tailwater effects are taking place in the continuous simulation model. The receiving pipe (or receiving channel, which becomes the Point of Compliance) is a free discharge, because in the range of analysis (continuous hourly peak discharges from the analyzed area from 10% of Q_2 to Q_{10}) it is assumed that the conveyance system is more than sufficient and that no tailwater effects are present (continuous Q_{10} is much smaller than synthetic storm – rational method 25 year, 50 year or 100 year peak flows used to design most conveyance systems). Consideration of tailwater is part of the design of the receiving conveyance system, which is outside of the scope of hydromodification analysis. Also, modeling of tailwater effects in continuous simulation is extremely complex (because of the non-simultaneity of the peak flows in neighboring systems) but most of all unnecessary, since most of the discharges are associated with low flows where no tailwater exists. In addition, the analysis is made at an hourly level, not at an instantaneous level such as when determining peak flows for design. Even if the outfall system is a natural creek that has not been analyzed, the purpose of hydromodification is to determine a flow duration curve in post-development conditions smaller or equal than the flow duration curve of pre-development conditions, and not to analyze what happens with the discharge downstream of the point of discharge (the answer will be “it happens the same that has being happening until now, but with a reduced effect because the discharges has been reduced in the range of analysis”).

Solution: No action needed.

Comment 6-25:

6-25: Attachment H, LID Usage Editor (pdf page 104 of 120): Table 2 - Summary of Developed Triple Purpose BMP (pdf page 68 of 120) lists the area of the BMP as 4,650 square feet. Please confirm values match between tables.

Response:

There is a typo in Table 2. Area should be 4,550 sq-ft as modeled.

Solution: Update Table 2.

Comment 6-26:

6-26: Attachment H, LID Control Editor, Surface (pdf page 104 of 120): What condition does the manning's n value of 0.05 represent listed for the surface roughness?

Response:

The n vale of 0.05 represents a typical average value for the manning's coefficient in pervious condition, for the sheet flow runoff, before the runoff is collected by a creek or drainage system. This value has been approved in multiple studies along San Diego County, and it will be standardized after the new BMP Manual is approved by the middle of 2015. As there is precedence by the use of this value in other projects, and as there is no a standard value recommended yet, no change is needed.

Solution: No action required.

Comment 6-27:

6-27: Attachment H, LID Control Editor, Underdrain (pdf page 105 of 120): Provide the calculation along with any parameters used for the Drain Coefficient value shown of 0.2278.

Response:

The C coefficient is a parameter that must be entered into SWMM to insure that the discharge flow is in accordance with the selection of a constraining orifice. Attachment H LID Control Editor, in the Drain (flow) Coefficient section explains the peak flow equations as (a) expressed in in/hr which is the way SWMM uses it (defined as an infiltration along the BMP area), and (b) expressed in cfs per the normal orifice equation of hydrology and hydraulic literature. The provided equations will allow the reviewer to perform the appropriate calculation on its own and verify the validity of the C coefficient calculated by REC engineering.

Solution: No action needed.

Comment 6-28:

6-28: Attachment H, Outfall OU_POST-POC1 (pdf page 107 of 120): Is the outfall OU_POST-POC1 connecting into a storm drain system or discharging to open channel? The downstream

boundary is shown as "FREE". If the outfall is connecting into a storm drain system has the downstream system been analyzed?

Response:

Repeated comment, irrelevant to the hydromodification analysis. See response to comment 6-24.

Comment 6-29 (note to applicant):

6-29: Lake Jennings - HMP Management with Bioretention - POC1: Results (pdf page 117 of 120): Reviewer notes: The EPA SWMM version 5.0.022 is a superseded version of the program.

Response:

REC appreciated the comment. However version 5.0 is an acceptable version, and as we are extremely familiar with this version, the report was prepared with it. Comment no relevant to the approval process.

Solution: No action needed.

Comment 6-30:

6-30: EPA SWMM Model, POC 1.INP: The SWMM model received 1/14/2015 uncovers instances where parameters in the model does not match screen captures included in the Attachment H of the technical memorandum. The inconsist parameters are for Subcatchment PRE %Slope and %Imperv values don't match between model and Attachment H. Verify model or Attachment H for correct output and update.

Response:

The screen shots in Attachment H were prepared first, and sometimes last minute changes in the grading and/or design generate changes in the model that were not updated in the screen shots. The initial objective of the screen shots when the first projects were prepared by Dr. Parra was to help the approval process in the first models prepared, because back in 2012 engineers where not familiar with SWMM and cities in the north county (San Marcos, Vista, Oceanside) were requesting screen shots to have an easy way to confirm that the model and the report were consistent. At this point, as most engineering firms are familiarized with SWMM, we believe that screen shots are no longer necessary and as long as there is consistency between the model file provided, the input file included in the attachment as printed by SWMM, and the tables in the main text of the document, it should be no issue as the reviewer does not have to check the screen chock but just the correspondence between the input file in the document and the file provided for review.

Solution: Eliminate screen shots to avoid confusion. Provide files to reviewer so reviewer can check that the files provided and the input printed in the report are consistent. Review tables in text for consistency.

Comment 6-31:

6-31: EPA SWMM Model, POC 1.INP: The SWMM model's subcatchment areas does not match the areas shown for the drainage basins reflected on exhibit, Figure 2 (pdf page 87 of 120). Drainage basin 1, Figure 2, shows an area of 4.94 where the SWMM model shows subcatchment area for DMA_1 of 4.2255 and BIORETENTION-1 of 0.10445.

Response:

Reviewer is correct. Consistency among areas must be checked.

Solution: review areas to insure consistency. Re-run the model and update the report. Verify consistency of figures, model (between pre and post-development areas) and text and/or tables in terms of area.

Comment 6-32:

6-32: EPA SWMM Model, POC 1.INP: The SWMM model subcatchment areas between pre- and post-developed conditions do not match contributing to POC1. Is there a reason the total tributary area is less in the post-developed condition? The subcatchment area for PRE is 25.80. The subcatchment areas for DMA_1 is 4.2255, BIORETENTION-1 is 0.10445, OFFSITEPOC1 is 21.27 with the sum resulting in 25.6

Response:

Reviewer is correct. Consistency among areas must be checked.

Solution: review areas to insure consistency. Re-run the model and update the report. Verify consistency of figures, model (between pre and post-development areas) and text and/or tables in terms of area.

Comment 6-33:

6-33: EPA SWMM Model, POC 1.INP: The SWMM model subcatchment areas for the post-developed conditions summation results in the value of 25.6. The summation of the post-developed conditions shown on Figure 2 (pdf page 87 of 120) for drainage basins 1 and 2 result in a value of 26.24.

Response:

Reviewer is correct. Consistency among areas must be checked.

Solution: review areas to insure consistency. Re-run the model and update the report. Verify consistency of figures, model (between pre and post-development areas) and text and/or tables in terms of area.

Comment 6-34:

6-34: EPA SWMM Model, POC 1.INP: The SWMM model's simulation run produces peak events greater in the post-developed conditions versus the pre-developed conditions analyzed under the Statistics Report Selection for the peak total inflows of the outfalls for the return periods closer to the 10 year events.

Response:

Errors in the Flow Duration Curve (FDC) were related to errors in the areas noted in previous comments. The analysis was repeated, and REC noticed the same error mentioned by the reviewer. Design was slightly modified (low flow orifice was increased from 1.75 inches to 2.50 inches). FDC now satisfies hydromodification requirements.

Solution: Re-run the model. Update Flow Duration Curve Tables. Update graphics, model input and output files.

ATTACHMENT I

Geomorphic Assessment
NA