SOURCE WATER PROTECTION GUIDELINES

INTRODUCTION

The City of San Diego Water Department (Water Department) has written Source Water Protection Guidelines for new developments to guide future activities in the San Diego County watersheds that drain into drinking water reservoirs. The Guidelines were prepared to assist municipal agencies, designers, land planners, developers, and laypersons conduct site design planning and select best management practices (BMPs) that protect or improve the quality of runoff draining into the reservoirs. Although rainfall is relatively low in San Diego in an average year, the City derives as much as 20 percent of its drinking water from local runoff. Thus, this resource must be protected from pollution. The Guidelines are necessary because the reservoirs have different pollutants of concern than those that are typically addressed under the current storm water regulations (e.g., nutrients, organic carbon). Specifically, the Guidelines provide a stepwise, simplified BMP selection process to ensure that preferred source water protection BMPs are considered. The Source Water Protection Guidelines are a succinct package consisting of:

- Project Evaluation Worksheet
- Four Decision Guides (Decision Guide A – Project Design BMPs; Decision Guide B – Source Control BMPs; Decision Guide C – Treatment Control Considerations; and Decision Guide D – Pre-Treatment and Post-Treatment BMPs)
- Treatment BMP Technologies Matrix
- Seven appendices providing summary data on BMPs with links to Internet resources, guidance for calculating runoff volumes, references, and acknowledgements.

Seven of the nine drinking water reservoirs owned and operated by the Water Department warrant the protection these Guidelines offer because their surroundings are presently largely rural and undeveloped. As development occurs, the potential for increased runoff volumes and associated pollutants also increases. A window of opportunity exists now to establish recommendations that protect the drinking water resources into the future. The reservoir watersheds governed by these Guidelines include:

- Barrett Reservoir
- El Capitan Reservoir
- Hodges Reservoir
- Morena Reservoir
- Otay Reservoir
- San Vicente Reservoir
- Sutherland Reservoir

The Water Department also operates drinking water reservoirs at Miramar Lake and Lake Murray; however, because water quality control measures are already in place and the watersheds are mostly built-out, these two watersheds are not the focus of these Guidelines.

Lands within the watersheds of concern are mostly outside the City of San Diego, and are largely within the jurisdiction of the County of San Diego; cities of Chula Vista and Escondido; and state, federal, and Indian lands. Although use of these Guidelines is therefore voluntary, many of the water quality protection principles included herein are consistent with other federal, state, and local regulations and protocols. In particular, the guidance provided here is consistent with state and local storm water permit requirements, as well as local planning protocols. Considering these Guidelines in the project planning stages is highly recommended to further safeguard drinking water supplies. Through this process, a project proponent or reviewer can determine whether or not the proposed project is subject to a Standard Urban Stormwater Mitigation Plan (SUSMP), which is mandatory for certain projects in San Diego County, and can compare various BMPs that may be appropriate for the project (Step 5 of the Project Evaluation Worksheet).

These Guidelines do not address water quality concerns during construction activities, but rather are designed to help project proponents and reviewers address potential water quality issues over the life of the project by incorporating better site designs and source controls to protect source water. This process is applicable to nearly all projects. In addition, for large or complex projects, the Guidelines help focus the selection of treatment BMPs that are most effective (based on published studies) at reducing the pollutants of concern for drinking water protection in San Diego County.

Project proponents should be aware that the following policies and regulations provide legal authority for reviewing development projects and making recommendations relative to proper storm water management. These polices provide guidance for incorporating storm water management practices and methods into land development for water quality protection. Useful information may be obtained at the following websites:

City of San Diego:

- Model Standard Urban Storm Water Mitigation Plan for San Diego County, Port of San Diego, and Cities in San Diego County, February 7, 2002. See: http://www.swrcb.ca.gov/rwqcb9/programs/stormwater/sd%20permit/Approved%20Final%20Model%20SUSMP.PDF
- San Diego Municipal Code, Land Development Manual, Storm Water Standards, A Manual for Construction & Permanent Storm Water Best Management Practices Requirements, May 30, 2003. See: http://www.sannet.gov/development-services/news/pdf/stormwatermanual.pdf.

County of San Diego:

- San Diego County Storm Water permit. See: http://www.swrcb.ca.gov/rwqcb9/programs/sd_stormwater.html
- County of San Diego Municipal Department of Public Works, Storm Water Standards. See: http://www.sdcounty.ca.gov/dpw/stormwater/stormwater.html

Chula Vista:

- Development and Redevelopment Projects Storm Water Management Standards Requirements Manual. See: http://www.chulavistaca.gov/City_Services/Development_Services/Engineering/stormWaterManual.asp

Escondido:

- Storm Water Management Requirements and Local Standard Urban Storm Water Mitigation Plan. See: http://www.ci.escondido.ca.us/depts/pw/utilities/stormwater/construction/manual.pdf

WHAT POLLUTANTS OF CONCERN ARE IMPORTANT IN THE RESERVOIR WATERSHEDS?

"Pollutants," in the context of urban runoff, may include solid or dissolved constituents that otherwise would not be present in clean runoff. They may be hazardous (such as chemicals and pesticides) or non-hazardous (such as sediment or fertilizers), but can still cause water quality impairment when washed into creeks and drinking water reservoirs. The Water Department places a high priority on improving and maintaining the quality of its drinking water supply reservoirs. High quality water is needed to provide for long-term safety of the region's drinking water supply and for sustainable, cost-effective water treatment, and to support other beneficial uses of the reservoirs, like aquatic life and recreation.

Protecting reservoir water quality requires that the quality of water entering the reservoirs is maintained or improved. Local runoff to the reservoirs provides an average of about 20 percent of the Water Department's total water supply. Runoff can also affect the quality of imported water from the Colorado River and the State Water Project that is stored in the reservoirs, which is on average another 20 percent of the total water supply. Given that 40 percent or more of the City's drinking water comes from the water supply reservoirs and is vulnerable to impacts from low quality runoff entering the system, it is critically important to maintain high quality runoff and to protect the reservoirs from any adverse impacts to drinking water quality.

Water Quality Objectives and Goals

To provide a framework for the Source Water Protection Guidelines, the Water Department has established quantitative water quality goals and objectives for over a dozen indicator constituents to be applied to their source water reservoirs (Table 1). The objectives are based on the Water Quality Control Plan for the San Diego Basin (Basin Plan, San Diego Regional Water Quality Control Board [RWQCB], 1994). "Enhanced water quality goals" have also been established, based on upcoming regulatory requirements and state-of-the-science knowledge, to more fully address emerging contaminants that can adversely affect drinking water supply. In addition to the numeric objectives and goals, an underlying anti-degradation policy from the Basin Plan also provides a broader requirement to maintain existing high quality conditions. Together, the water quality objectives and enhanced goals can be applied to quantify the current health of the water supply reservoirs and to provide a benchmark for the protection of high quality water in the future.

Pollutants of Concern

Water quality goals and objectives have been compared to available water quality information to evaluate existing reservoir conditions, and to help prioritize future needs to improve and protect water quality. Given the extent of growth and urbanization expected in the region, the Water Department has also anticipated the effects of future residential and commercial development in the target watersheds.

Several pollutants are a particular concern for the City's drinking water reservoirs, based on an analysis of existing water conditions (Brown and Caldwell [BC] 2003). The potential effects of future urban runoff adds another layer of concern and urgency in applying source controls and best management practices to adequately address water quality.

A review of the City's water quality monitoring data (both in the reservoirs and tributary streams) indicated that the following constituents are the highest priority for protection of reservoir source waters:

- Nutrients (i.e., nitrogen and phosphorus) and related algae, and taste and odor compounds
- Total organic carbon (TOC)
- Total dissolved solids (TDS)

Table 1. Water Quality Objectives and Goals for San Diego Source Water Reservoirs

Constituent	Existing Water Quality Objectives[1]	Rationale for Objective	Enhanced Water Quality Goals	Rationale for Goal
Field				
Total dissolved solids (mg/L)	300 - San Vicente & El Capitan; 500 - elsewhere	Basin Plan Secondary drinking water std. (500)		
Dissolved oxygen (mg/L)	6.0	Basin Plan		
pH (std. units)	6.5-8.5	Basin Plan		
Turbidity (ntu)	20	Basin Plan	5	Experience with treatability at San Diego Water Dept. Water Treatment Plants
Chemical				
Total phosphorus (mg/L)	0.025	Basin Plan		
Total nitrogen (mg/L)	N:P < 10:1	Basin Plan		
Nitrate (mg/L-N)	10	Basin Plan Primary drinking water standard		
Total organic carbon (mg/L)			3	Stage 1 D/DBP[2] Rule – midpoint of first removal bin
Total suspended solids (mg/L)			90	Secondary drinking water standard
Geosmin (mg/L)	None		15 in treated water	Human detection threshold; at greater levels a significant portion of the population finds water unpalatable
MIB (mg/L)	None		10 in treated water	Same as above
Microbiological				
E. coli (cfu/100mL)	126	Basin Plan – Rec 1 "steady state"	50	LT2IESWTR[3] - trip level for crypto monitoring
Enterococcus (cfu/100mL)	33	Basin Plan – Rec 1 "steady state"		
Fecal coliform (cfu/100mL)	Geo mean < 200 90% < 400	Basin Plan – Rec 1		
Cryptosporidium (oocysts/L)			0.075	LT2IESWTR[3] - upper limit for Bin 1
Giardia (cysts/L)			1.0	Treatment to 1-10 particles/ml, allows 99-99.9% certainty that <1 is Giardia

[1] Water Quality Control Plan for San Diego Basin (Basin Plan), Regional Water Quality Control Board – San Diego Region, September 1994.
[2] Disinfection/Disinfectant By-Product Rule.
[3] Long-term Interim Enhanced Surface Water Treatment Rule.

Nutrients (Algae, Taste and Odor). Many of the reservoirs experience seasonal problems with excessive algae growth and associated low dissolved oxygen conditions in the summer and fall (July through November), which are caused by excessive nutrients (nitrogen and phosphorus). Algal blooms also produce taste and odor producing compounds that can be present in significant quantities during the summer months. Levels of taste and odor compounds that exceed the City's goals (Table 1) can restrict the use of source water, require special treatment, result in occasional adverse taste and odor problems in finished water, and/or ultimately force Water Department operators to abandon a reservoir as a water source.

Total Organic Carbon. Relatively high levels of TOC in some of the Water Department reservoirs present another problem by acting as precursors to disinfection by-products (DBPs), which can be formed in the water treatment disinfection process and have been found to have adverse human health effects at low levels. Future regulations will require water treatment plants to reduce TOC levels, which could increase overall treatment costs, unless they can be reduced in the source water reservoirs. TOC in the reservoirs can be associated with algae produced from excess nutrients, and/or from decomposing vegetative material in storm water runoff. Existing TOC levels in several of the reservoirs regularly exceed the enhanced water quality goal of 3 mg/L.

Total Dissolved Solids. There are also concerns about levels of TDS in the Water Department water supply reservoirs. The reservoirs currently must maintain a delicate balance via water blending to offset high levels of TDS in imported water from the Colorado River to avoid exceeding the objective of 500 mg/L for blended water. Future increases in runoff TDS in local water supplies could offset that balance and make achieving water quality objectives more difficult.

DETERMINING THE SENSITIVITY OF YOUR PROJECT

The Guidelines provide a framework for determining the extent to which a given project may impact reservoir water quality. The Project Evaluation Worksheet includes a series of questions designed to evaluate the relative impact of a given project. The Guidelines focus the selection of BMPs, based on which tier a particular project falls into. Projects are grouped into 3 "tiers," based on various factors.

- "Tier 1" projects are smaller projects (e.g., single family residences) or projects that do not trigger the SUSMP requirements.
- "Tier 2" projects (most projects) either trigger the SUSMP requirements or otherwise may cause or contribute pollutants in storm water runoff.
- "Tier 3" projects are the largest, most significant projects that warrant the highest consideration for source water quality protection.

SELECTING THE RIGHT BMPS FOR YOUR PROJECT

There is a wide range of BMPs available in the "toolbox" that can be considered for the protection of source waters. It is critical that all stakeholders responsible for source water protection understand the array of available BMPs, and the advantages and disadvantages of each, so that the most cost-effective BMPs are selected to maximize the protection of source waters.

BMPs are categorized into the following three types:

- **Project Design BMPs –** These are BMPs that are low impact measures incorporated into projects during the planning and design phase that take advantage of natural processes to control pollutants in storm water runoff.
- **Source Control BMPs –**These are BMPs that minimize the exposure of pollutants to the environment and introduction of pollutants in runoff at the source, that is, before storm water contacts the pollutant source, picks up pollutants, and runs off the site.
- **Treatment Control BMPs –** These are BMPs that are located downstream from the point at which urban runoff contacts the pollutant source. These treatment devices treat or remove pollutants from storm water runoff, protecting downstream source waters.

The following sections provide the basic concepts and philosophies behind these three categories of BMPs. Later sections of these Guidelines provide procedures and criteria to focus the proper selection of site-specific BMPs from the available options.

Project Design BMPs

Project Design BMPs are elements of project design that are incorporated during the planning and design stages of projects to capture and infiltrate and/or treat storm water, so that runoff of contaminated storm water to receiving waters is minimized. These BMPs are sometimes referred to as "low impact development" practices because they take advantage of basic natural processes such as infiltration to capture storm water as opposed to applying a higher impact process, such as a structural storm water treatment system. As such, Project Design BMPs, when carefully planned and designed, blend in seamlessly with other aspects of the project design, allowing for storm water discharge to be controlled, while having a minimal impact on the overall project design.

Examples of Project Design BMPs are minimizing paved areas in the project to reduce storm water runoff (both the surface area of paving and the degree to which paved areas are directly connected to drains), incorporating zero-discharge features (e.g., ponds, vegetated depressions) into project designs, and maximizing natural spaces and landscaping. Thus, any project design elements that can enhance natural infiltration or control of storm water volume can be considered Project Design BMPs.

All projects (i.e., Tiers 1, 2 and 3) should consider incorporating Project Design BMPs into their development designs. Guidelines for selecting Project Design controls for your project are provided in Decision Guide A.

Source Control BMPs

An effective way to minimize runoff of pollutants in storm water is to minimize the exposure and introduction of pollutants at the source. Source Control BMPs are basic techniques to minimize pollutants including preventing contact between rain and pollutants at the site, minimizing the sources of potential pollutants and minimizing dry weather flows that would carry pollutants.

Preventing contact between rain and pollutant sources ensures that undesirable constituents will not be transferred to storm water upon contact with rain. Techniques that can accomplish this include providing secure shelter for stored materials to prevent rain exposure, covering exposed storage of materials, and using berms to control run-on of storm water onto areas of material storage. The amount of hazardous materials and operations involving these materials can also be minimized to reduce potential for exposure. For example, the use of hazardous materials can be reduced, washdown water activities can be minimized and activities involving hazardous materials (e.g., vehicle maintenance) can be minimized or performed indoors.

Finally, dry-weather (non-storm water) flows which could carry pollutants can be minimized by using techniques that reduce water use while still maintaining site operations. For example, irrigation runoff can be reduced by using drip irrigation techniques, installing automatic irrigation shutoffs, and containing irrigation water onsite. Use of drought tolerant plants and native species can also reduce the need for irrigation water.

All projects (i.e., Tiers 1, 2 and 3) should consider implementing Source Control BMPs as part of project design and neighborhood covenants. Guidelines for selecting Source Controls for your project are provided in Decision Guide B.

Treatment Control BMPs

Treatment Control BMPs are further measures, or a third line of defense, that can be taken to control storm water runoff, in addition to Source Control and Project Design BMPs. Treatment Control BMPs are project elements located downstream from the point at which pollutants contact the source that are specifically designed to remove pollutants from storm water runoff.

A wide range of Treatment Control BMPs is available to remove pollutants. The selection of the proper Treatment Control BMP depends on a number of site-specific characteristics. For example, an extended detention basin may be appropriate for projects that have high groundwater tables, poorly draining soils, or large surface areas. Projects located in hilly areas could consider methods to reduce the velocity of storm water discharge such as check dams, gabions or baffle boxes. If erosion is a concern, BMPs such as settling basins or sand filters may be more appropriate than swales, which can clog with sediment and reduce their effectiveness.

Numerous scientific studies have shown that although fairly high pollutant removals may be achieved using various storm water treatment systems and technologies, many other structural BMPs are not effective in reducing nutrient concentrations. In addition, fewer studies have evaluated the effectiveness of BMPs in reducing TOC and TDS as compared to other urban runoff constituents. Scientific research also indicates that vegetated BMP systems that involve filtration, infiltration, and biological uptake are effective in reducing nutrients. The results of many recent scientific studies on pollutant removal effectiveness are summarized in the Treatment BMP Technologies Matrix.

Only some projects (i.e., Tiers 2 and 3) should consider Treatment Control BMPs, since these types of BMPs have higher costs for design, implementation, operation, and maintenance. In particular, maintenance requirements and associated costs must be considered when selecting treatment control BMPs. Guidelines for selecting Treatment Controls for your project are provided in Decision Guide C.

Additional Approaches to Improve Runoff Water Quality

Certain projects in the watersheds may be of such a large scale or have particular features that result in a higher than usual concern for water quality (Tier 3 projects). In these cases, project proponents may wish to consider more intensive BMP “systems” or regional facilities in addition to on-site treatment controls. These approaches may provide a higher level of protection for source water quality.

Treatment Trains

"Treatment trains" are storm water BMPs applied in series to achieve greater improvement in water quality than can be achieved using a single BMP. Treatment trains often consist of pre-treatment and/or post-treatment controls installed upstream or downstream of a treatment BMP to enhance the performance and/or pollutant removal effectiveness of the BMP itself. Treatment trains are recommended in sensitive areas or for developments with greater potential to affect reservoir water quality.

Regional, Watershed-Based Approaches

The Water Department encourages the application of regional, watershed-based, multi-use facilities for storm water treatment wherever possible. As new development occurs over large areas within the City's drinking water supply watersheds, there is a significant window of opportunity to apply more regional approaches, with several related benefits.

- **Greater overall improvements in water quality**. Regional facilities can enable significant reductions in urban runoff pollutants by capturing runoff from both existing and new or re-development areas and from dry- and wet-weather flows.
- **Improved long-term effectiveness**. Regional facilities include the designation and funding of a responsible agency to ensure regular maintenance and effective long-term operation to provide reliable treatment into the future.
- **Urban runoff as a resource.** Regional facilities can include an infiltration component, which will reduce urban runoff flows and will also provide for recharge of local aquifers, reducing dependence on imported water supplies.
- **Multiple uses.** Regional, watershed-based facilities provide more opportunities for multiple benefits, such as habitat improvements, green space preservation, and public parks or recreational facility creation or enhancement.
- **Lower cost to remove pollutants**. Regional facilities can help to make the most of local funds and provide more sustainable, cost-effective means to address urban runoff problems, which can be upgraded as necessary to meet downstream water quality objectives.

Guidelines for selecting BMP treatment trains (pre-treatment and post-treatment considerations) and regional approaches are provided in Decision Guide D.

RUNOFF CALCULATIONS

Unlike the SUSMP, the Source Water Protection Guidelines do not specifically require calculation of runoff volume. However, the design and application of BMPs to implement the Guidelines will require you to calculate runoff volumes in order to size BMPs appropriately. As a general rule, you should estimate pre-development and post-development runoff volumes. Ensuring that pre-development and post-development volumes are equal minimizes the water quality impacts of the project. Calculation of post-development runoff is also necessary for sizing any treatment BMPs required for the project. Appendix B to these Guidelines includes a summary of runoff coefficients and a discussion of runoff estimate methodologies.

HOW TO USE THE GUIDELINES

The Source Water Protection Guidelines are designed to be simple and easy to use. An overview of the Guidelines process is summarized on Figure 2 below. The process works as follows:

1. Review the Reservoir Watershed Index Map (Figure 1) to identify whether your project is located within a drinking water reservoir watershed.

2. If your project is located within a drinking water reservoir watershed, identify your project footprint on the applicable watershed map. See Figures 1(a)-1(d) (attached as hard copy and included on CD accompanying these Guidelines).

3. Complete the Project Evaluation Worksheet to identify what tier of protection (Tier 1, 2, or 3) is applicable for your project.

4. Work through Decision Guides A and B to select appropriate site design and source control BMPs for your project.

5. If your project falls into Tier 2 or Tier 3, work through Decision Guide C to identify alternative treatment BMP technologies. Use the Treatment BMP Technologies Matrix to compare the pollutant removal effectiveness and other factors for the various alternatives.

6. If your project falls into Tier 3, also consider Decision Guide D to identify potential treatment train and/or regional BMP systems.

7. Include the completed Source Water Protection Guidelines package with selected BMPs in your project's first formal submittal to the planning department.

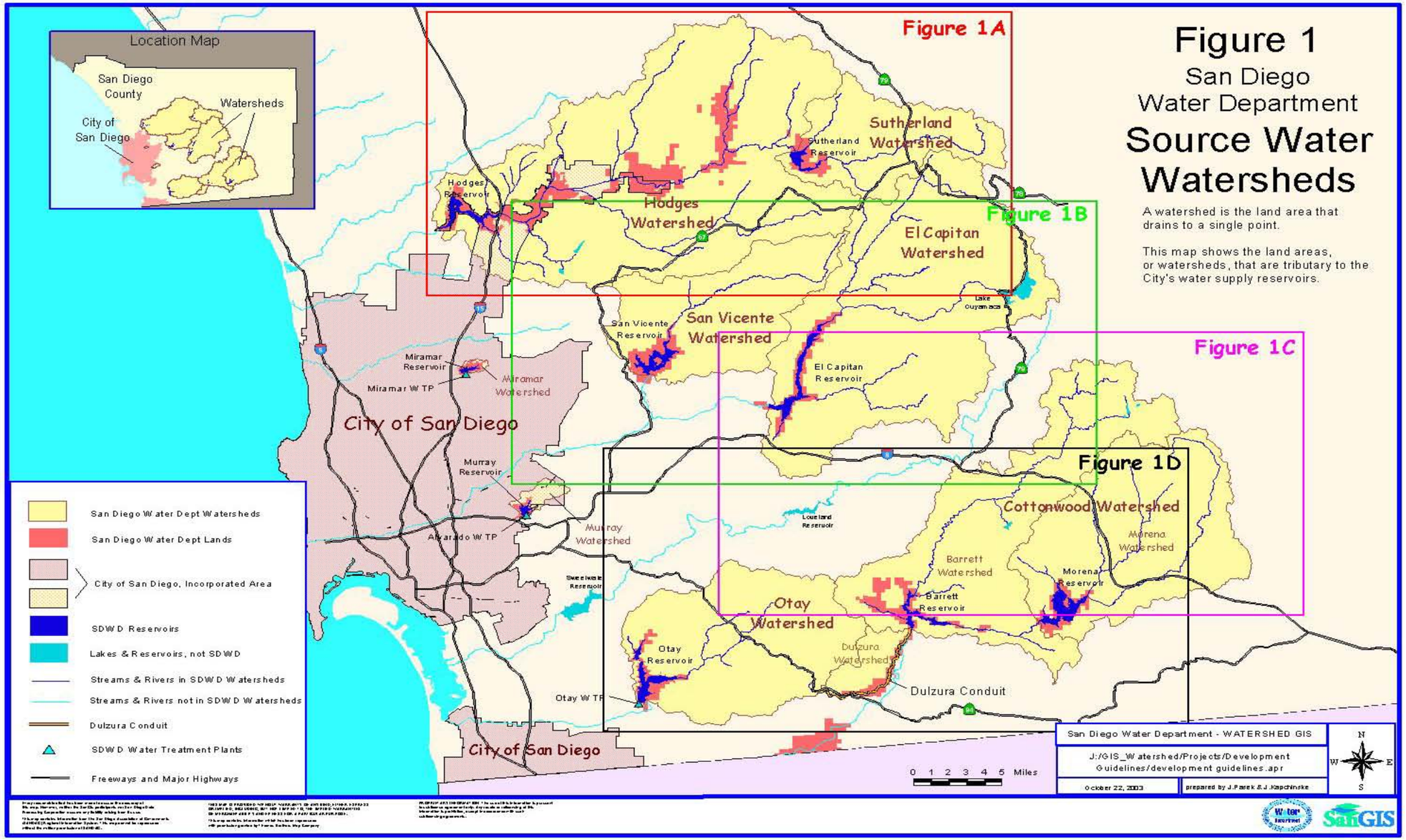


Figure 1 – Reservoir Watershed Index Map

NOTE:

Please call the City of San Diego Public Information Office at (619) 527-7413 if you have questions or need assistance determining whether your project is within one of the drinking water reservoir watersheds. Have your Assessors Parcel Number available. The San Diego Water Department thanks you for considering these Guidelines and your efforts to preserve the quality of our regional drinking water sources.

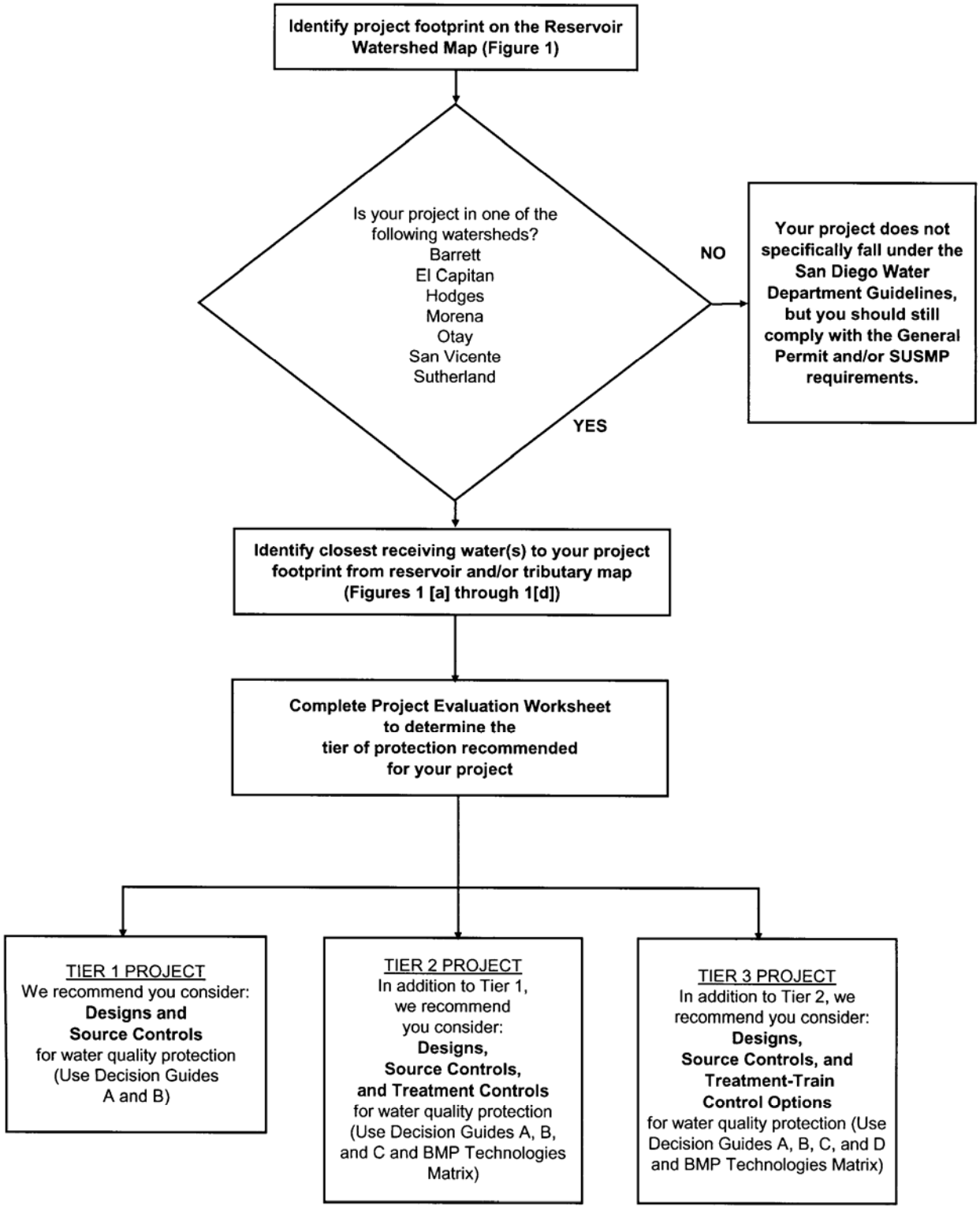


Figure 2 - Overall Process for Use of Source Water Protection Guidelines

USING THE TREATMENT BMP TECHNOLOGIES MATRIX

This table presents a summary of BMP performance in removing the constituents of concern for San Diego source water protection. The first four columns (highlighted in yellow) present removal efficiencies for the source water pollutants of concern (i.e., nitrogen, phosphorus, TDS, and TOC). Additionally, a fifth column (total suspended solids, or TSS) is shaded in a lighter shade of yellow, since removal of TSS may also result in a decrease in phosphorus and TOC.

The table was developed by compiling the results of many recent published studies on BMP pollutant removal effectiveness. The majority of the studies looked at efficiencies as a percent reduction in constituent concentrations of effluent exiting the BMP, as compared to influent entering the BMP. This type of analysis yields an approximate assessment of performance; however, BMP efficiency studies are not uniform and precise, and results may vary considerably depending on local site conditions. In addition, recent research indicates that a simple percent reduction analysis may not be the best measure of BMP effectiveness. For example, CalTrans, 2002 found that sand filters function such that they will reduce the concentration of total suspended solids to a constant level (7.5 mg/L), regardless of the influent concentration of TSS. Thus, efficiency is a function of influent concentration rather than true removal efficiency. Where available, information is provided on the pollutant removal efficiencies for other constituents present in typical urban runoff.

The Treatment BMP Technologies Matrix is organized according to the following treatment categories:

Filtration: Gravity flow-through systems that filter runoff to remove solids and other pollutants from the water. These systems typically require about 4 to 6 feet of elevation difference (between inflow and outflow) to be successful.

Biofiltration: Vegetated systems that use grass, plants, shrubs, and/or trees to slow water velocity (promote sediment settling), absorb moisture, promote percolation into the soil, and uptake pollutants. These are most useful on relatively flat terrain with well-drained soils.

Infiltration: Systems that promote the percolation of surface runoff into the ground. Infiltration best management practices to capture urban runoff and reuse it as a resource for augmenting local groundwater supplies are recommended, wherever possible. These can be natural or fabricated systems that incorporate sand, gravel, rock, and various forms of vegetation. Well-drained soils and a low groundwater table are required. Consider pre-treatment as needed to limit adverse impacts on groundwater quality. Note the limitations where infiltration can be applied, as outlined in the San Diego County storm water permit and the Model SUSMP and summarized below.

- Not allowed in areas where seasonal high groundwater mark is within 10 feet or less from base of infiltration treatment BMP.
- Not allowed within 100 feet horizontally from any water supply wells.
- No dry-weather flows allowed (they must be diverted).
- Not allowed in areas to take drainage from industrial or light industrial areas.
- Pretreatment required for any urban runoff from commercial developments.
- Pollution prevention and source control BMPs are required to protect groundwater quality.
- Soil with appropriate physical and chemical characteristics.

Settling: Systems that capture runoff in large volumes to promote the settling or fall out of sediments.

- Detention systems hold back water temporarily. Water is released at slow, controlled rates to promote settling of solids, to reduce the volume of water discharged during storms, and to minimize downstream erosion.
- Retention systems store the captured runoff indefinitely. All solids and other pollutants associated with the captured water are retained in the unit or system. Water is lost over time through percolation and evaporation. These systems may require more maintenance than detention systems because more water is retained and not released. Vector control may also be an issue.

Appendices A through D to these Guidelines provides more information about the treatment BMPs included in the Treatment BMP Technologies Matrix. For each BMP, the following information is succinctly summarized in approximately one-half page:

- Name and brief description of the BMP
- Photo and/or schematic drawing
- Internet links to more detailed sources of information about the BMP

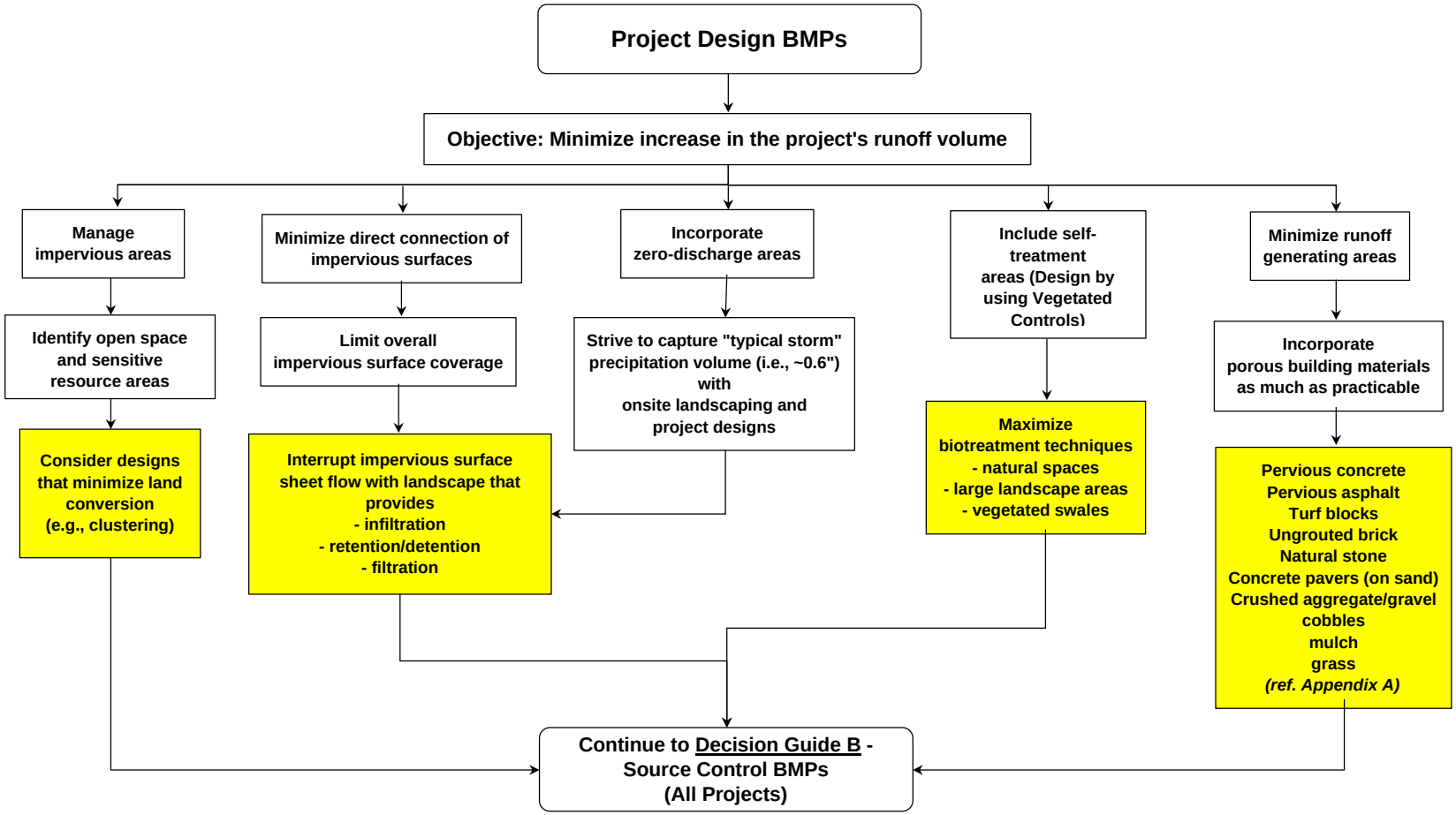
In addition, important information regarding BMP maintenance requirements is provided in Appendix E.

Project Evaluation Worksheet **NOTE: WORK THROUGH ENTIRE WORKSHEET**				
STEP	**CRITERIA**	**YES ✓**	**NO ✓**	**GUIDANCE DIRECTION**
1.	Is your project in one of the following drinking water watersheds: ▪ Barrett Lake, **or** ▪ El Capitan Reservoir, **or** ▪ Lake Hodges, **or** ▪ Morena Reservoir, **or** ▪ Otay Reservoir, **or** ▪ San Vicente Reservoir, **or** ▪ Sutherland Reservoir.			If yes, go to Step 2. If no, the project is not subject to the City of San Diego Water Department Watershed Protection Guidelines; however, we recommend you go to Step 7 to check if SUSMP requirements pertain to you.
2.	Will your project provide substantial additional sources of polluted runoff? (Per CEQA* checklist Item VIII(e), if you checked boxes indicating "potentially significant impact" or "less than significant with mitigation incorporation" as a result of additional sources of polluted runoff).			If yes, go to Step 4. If no, go to Step 3.
3.	Will your project otherwise substantially degrade water quality? (Per CEQA* checklist Item VIII(f), if you checked boxes indicating "potentially significant impact" or "less than significant with mitigation incorporation").			If yes, go to Step 4. If no, go to Step 5.
4.				**PROJECT IS TIER 3.** Use Decision Guides A, B, C, and D and the Treatment BMP Technologies Matrix **AND** go to Step 9.

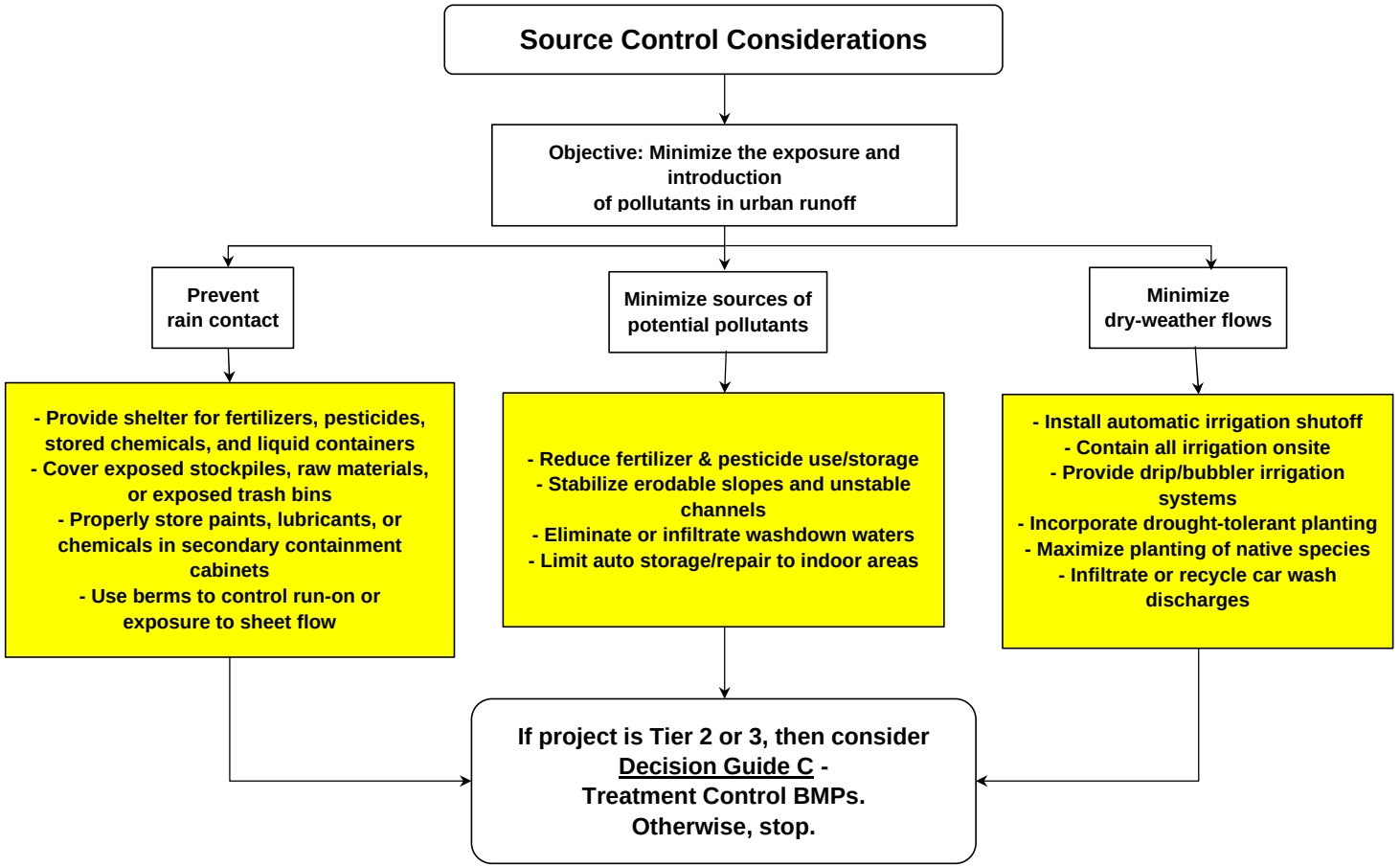
*If the project is in a jurisdiction where there are CEQA thresholds, use them. If not, please reference the 'Significance Determination Guidelines' for CEQA used by the City of San Diego, Development Services Department, Land Development Review Division, and Environmental Analysis Section.

Project Evaluation Worksheet **NOTE: WORK THROUGH ENTIRE WORKSHEET**				
STEP	**CRITERIA**	**YES ✓**	**NO ✓**	**GUIDANCE DIRECTION**
5.	Is your project: ▪ A residential project involving more than 10 units, **or** ▪ A commercial development involving more than 100,000 square feet of developed area, **or** ▪ An automotive repair shop, **or** ▪ A restaurant, **or** ▪ A hillside development greater than 5,000 square feet, **or** ▪ In the vicinity of an environmentally sensitive area (ESA), **or** ▪ Involving a parking lot greater than 5,000 square feet or more than 15 spaces, **or** ▪ Involving road or travel surfaces with a surface area of 5,000 square feet or more?			If yes, please check SUSMP requirements from the local municipality and we recommend you go to Step 7. If no, go to Step 6.
6.	Is runoff from your finished project likely to contain significant nutrients (nitrogen or phosphorous), or total organic carbon, or salts (total dissolved solids) or sediment that may impact reservoir water quality?			If yes, go to Step 7. If no, go to Step 8.
7.				**PROJECT IS TIER 2.** Use Decision Guides A, B, and C and the Treatment BMP Technologies Matrix. Compliance with applicable SUSMP requirements and other pertinent design standards is recommended. Go to Step 9.
8.				**PROJECT IS TIER 1.** Use Decision Guides A and B and go to Step 9.
9.	Attach this form and a list of selected BMPs to your project's first formal submittal to the Planning Department.			

Decision Guide A: Project Design BMPs
[Applicable to ALL Projects - Tier 1, Tier 2, and Tier 3]



Decision Guide B: Source Control BMPs
[Applicable to ALL Projects - Tier 1, Tier 2 and Tier 3]



Decision Guide C: Treatment Control BMPs [Applicable to Tier 2 and Tier 3 Projects]

Condition	BMPs to Consider		BMPs to Avoid
High groundwater or poorly draining soils	Extended detention basins* Retention basins* Constructed wetlands		Porous pavement Infiltration trench Infiltration basin Dry wells
Drainage area larger than 10 acres	Treatment trains Extended detention basins Retention basins		Infiltration trench Infiltration basin Dry well Vortex separators Bioretention Grass channels
Drainage area smaller than 2 acres	Bioretention Swales Gravel-based wetland	Grass channels Surface sand filters Vortex separators	Constructed wetlands Dry ponds
Impervious area less than 10% of the total project area	Surface or perimeter sand filters Detention systems	Bioretention Grass channels	N/A
Impervous area greater than 10% of the total project area	Sand filters Dry wells Swales Filter strips	Bioretention Infiltration Basin Trench Porous pavement	N/A
Vertical change across the project of 4 feet or more	Extended detention systems Sand filters Dry wells	Bioretention Swales	N/A
Hydraulic head is less than 1 to 3 feet	Filter strips		Sand filters Media filters Gravel-based wetlands Grass channels Dry wells Infiltration systems
Sensitive groundwater area	Bioretention		Infiltration trench Infiltration basin Porous pavement Subsurface storage Grassed swales Constructed wetlands
Area sensitive to visual impact	Bioretention Filter strips	Subsurface retention Vortex separators	N/A
None of the above	Filter strips Buffers Grass channels		N/A

If Project is Tier 2, Consider the Treatment BMP Technologies Matrix to Compare Alternative BMP Options

If Project is Tier 3, Consider the Treatment BMP Technologies Matrix and Decision Guide D

Note: Colors refer to categories of BMPs listed in the Treatment BMP Technologies Matrix.

N/A = Not Applicable

* - System should be designed to minimize infiltration

Decision Guide D: Pre-treatment and Post-Treatment BMPs

Additional Treatment-Train Recommendations for Tier 3 Projects

(Refer to Treatment BMP Technologies Matrix for Additional Considerations)

Pre-treatment and Post-treatment Considerations to Enhance Treatment Performance of BMPs at Large or Complex Project Sites

Condition	Potential Solution
Pre-treatment Considerations	
Hilly terrain or steep slopes that will concentrate runoff flow to the BMP.	Reduce incoming velocity to the BMP through pretreatment concepts, such as baffle boxes, gabions, check dams, rip rap, forebays.
Drainage from surrounding area may carry substantial amounts of debris (sticks, leaves, sediment) that could potentially clog or disrupt the BMP.	Provide up-front screening devices or sediment capturing concepts to pre-treat incoming flow, such as grates, flip-up bar screens, rip rap, forebays, and in certain situations, in-ground systems like hydrodynamic separators may be appropriate.
Native, undisturbed area may be subject to erosion that could cause unwanted sediment to be carried away with runoff. -OR- Developed areas may require multiple seasons to completely establish vegetation, which may result in unwanted erosion.	Provide up-front sediment-capturing concepts to slow incoming flow for sediment fallout or to block high sediment loads from entering the BMP, such as check dams, gabions, rip rap, forebays, meandering riparian water courses, and in certain situations, in-ground systems like hydrodynamic separators may be appropriate. Swales are not appropriate for high sediment loads.
Project area will likely contribute substantial amounts of dry-weather flow from single family homes (irrigation, car washing, washdown, etc.).	Integrate interconnected water courses through open spaces, and perhaps residences, to route dry-weather flows in ways that are beneficial to the environment without significant discharge to surrounding drinking water sources.
Post-treatment Considerations	
Project drains to sensitive or impaired receiving water (303(d)-listed) stream or water body	Additional post-treatment may be required by providing treatment-train concepts to reduce the target pollutants of concern, such as: - Bioretention basins or ponds (i.e., temporary/permanent water storage) - Infiltration techniques (i.e., runoff reduction) - Sand filters (post-treatment water quality "polishing")
Project or project area has limited space to accommodate BMPs that can provide adequate water volume capture/treatment.	Assess suitability for subregional or regional systems that can accommodate target storm volumes, such as: offline riparian corridors or vegetative buffer zones, or interconnected storage systems (e.g., ponds, gravel trenches, depressed landscape) over several acres.